

GRUNDIG SERVICE MANUAL

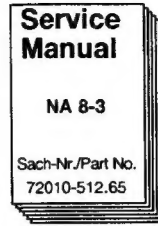
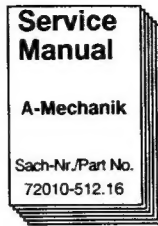


Ⓟ Btx * 32700 #



Zusätzlich erforderliche Unterlagen für den Komplettservice:

Additionally required Service Manuals for the Complete Service:



LC 345 E



LC 345 E (75.8590-1000 / G.MD 7300)

Der Camcorder LC345 E ist im Vergleich zur LC235 E mit einem Farbsucher ausgestattet. Dieses Service Manual enthält Schaltpläne, Platinenabbildungen und Abgleichanweisungen, die sich gegenüber dem Service Manual LC 235 E (Sach-Nr. 72010-513.25) ändern. Die Bausteinbestückung und die Sach-Nummern der einzelnen Bausteine entnehmen Sie bitte der Ersatzteilliste.

Grundlage für den Service an dem Camcorder LC 345 E sind folgende Service Manuals:

- LC 235 E (Sach-Nr. 72010-513.25)
- A-Mechanik (Sach-Nr. 72010-512.16)
- Netzteil NA 8-3 (Sach-Nr. 72010-512.65)

Compared with the model version LC235 E, this camcorder, LC345 E, is provided with a colour view finder. This Service Manual contains only the circuit diagrams, circuit boards and adjustment procedures which differ from those illustrated in the Service Manual LC 235 E (Part No. 72010-513.25).

For the modules and the part numbers of the individual modules please refer to the spare parts list.

The following Service Manuals are to be used as a basis for servicing the LC 345 E camcorder:

- LC 235 E (Part No. 72010-513.25)
- A-Mechanics (Part No. 72010-512.16)
- Power Supply NA 8-3 (Part No. 72010-512.65)



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Allgemeiner Teil

Meßgeräte

Zweikanaloszilloskop	Regeltrenntrafo
Digitalmultimeter	Millivoltmeter
Tongenerator	Stabilisiertes Netzgerät
Frequenzzähler	Farbgenerator
Vektorskop	

Beachten Sie bitte unser Meßtechnik-Programm, das Sie unter folgender Adresse erhalten:

Grundig AG
Geschäftsbereich Industrielektronik
Würzburger Str.150
90766 Fürth/Bay.
Tel. 0911/7330-0
Telefax 0911/7330-479

Sicherheitsausgangsprüfung

Nachdem Sie die Reparatur beendet haben, überprüfen Sie folgende Punkte, bevor Sie das Gerät an den Kunden zurückgeben:

1. Überprüfen Sie den Bereich Ihrer Reparatur auf fehlende oder schlechte Lötstellen. Kontrollieren Sie die ganze Platinenoberfläche auf Zinnspritzer und Kurzschlüsse.
2. Überprüfen Sie die Platinenverbindungen, und stellen Sie sicher, daß keine Leitungen eingequetscht werden oder Hochlast-Widerstände berühren.
3. Achten Sie auf unerlaubte Ersatzteile, insbesondere Transistoren, die bei früheren Reparaturen eingebaut wurden. Weisen Sie den Kunden darauf hin und empfehlen Sie den Austausch.
4. Achten Sie auf Teile, die zwar noch funktionieren, aber offensichtliche Abnutzungserscheinungen zeigen. Weisen Sie den Kunden darauf hin und empfehlen Sie den Austausch.

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General

Test Equipment

Dual channel oscilloscope	Variable isolating transformer
Digital multimeter	Millivoltmeter
AF generator	Stabilized power supply
Frequency counter	Colour generator
Vectorscope	

Please note our Catalog "Test and Measuring Equipment" obtainable from:

Grundig AG
Geschäftsbereich Industrielektronik
Würzburger Str.150
90766 Fürth/Bay.
Tel. 0911/7330-0
Telefax 0911/7330-479

Safety Check-out

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

Technische Daten

Camera

Aufnahmeelement: 1/3" CCD Halbleiter-Chip
 Auflösung: 320 000 Bildpunkte
 Beleuchtungsbereich: 2 - 100 000 Lux
 Mindestbeleuchtung: 2 Lux
 Zoombereich: 10-fach Motor-Zoom 6,2 - 62 mm
 Auto-Fokus-System: TTL Full Range Autofokus
 Filtergewindedurchmesser: 37mm
 Lichtstärke (Optik): 1 : 1,6 bis 1 : 2,9

Video

Aufnahmesystem: 2 rotierende Köpfe,
Schrägspurverfahren, PAL
Bandformat: 8 mm Videocassette
Bandgeschwindigkeiten: Standard play (SP) 20,051 mm/s
Longplay (LP) 10,058 mm/s

Audio

Aufzeichnungsverfahren: Schrägspurverfahren FM
Mikrofon: Elektret-Kondensator-Mikrofon (Mono)

Anschlußmöglichkeiten

Videoausgangsbuchse: Cinchbuchse, 1Vss, 75 Ω ,
unsymmetrisch, Video positiv
Audioausgangsbuchse: Cinchbuchse, -7,5dBm,
Impedanz < 2,2k Ω bei
einer Belastung von 47k Ω
RFU-DC-Spannungsausgangsbuchse: Spezial-Minibuchse 5V
Fernbedienbuchse: Stereoklinkenbuchse 2,5mm
Mikrofonbuchse: Monoklinkenbuchse 3,5mm,
-66dBm, niedrige Impedanz, mit
2,5 - 3V Gleichspannungsausgang, Impedanz 6,8k Ω

Betriebsspannung

Akkubetrieb: 6,0V
Netzteilbetrieb: 7,5V

Leistungsaufnahme

Aufnahmebetrieb (mit Monitor): ca. 6,0W

Allgemeines

Gewicht: ca. 770g (ohne Akkusatz, Lithiumbatterie,
Schulterriemen und Cassette)
Sucher: 0,6" Farb-Suchermontor
Arbeitstemperatur: 0°C bis 40°C

Technical Data

Camera

Image device: $\frac{1}{3}$ " CCD Semiconductor Chip
Definition: 320 000 Pixel
Illumination range: 2 - 100 000 Lux
Minimum illumination: 2 Lux
Zoom range: 10 fold motor zoom 6.2 - 62 mm
Auto focus system: TTL Full Range Autofocus
Filter thread diameter: 37mm
Luminous intensity (Optic): 1 : 1.6 to 1 : 2.9

Video

Video recording system: 2 Rotating heads,
Helical scanning FM system, PAL
Tape format: 8 mm Cassette tape
Tape speed: Standard play (SP) 20.051 mm/s
Longplay (LP) 10.058 mm/s

Audio

Audio recording system: Helical scanning FM system
Microphone: Electret condenser microphone (mono)

Connections

Video output socket: Cinch jack, 1 Vpp, 75Ω,
unbalanced, Video positive
Audio output socket: Cinch jack, -7.5dBs,
impedance less than 2.2kΩ
at a load of 47kΩ
RFU DC OUT: Special mini-jack, DC 5V
Remote jack: Stereo mini-minijack (2.5mm)
MIC jack: Stereo minijack (3.5mm), -66dBs,
low impedance, with
2.5V - 3V DC output, impedance 6.8kΩ

Power requirements

Battery pack:	6.0V
AC power adaptor:	7.5V

Power consumption

Camera recording (with viewfinder): approx. 6.0W

General

Weight: approx. 770g (without battery pack, lithium battery,
shoulder strap and cassette)
Viewfinder: 0.6" Colour Viewfinder
Operating temperature: 0°C to 40°C

Notizen / Notes

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook or composition paper.

LC 345 E Servicemittel / Service Jigs and Tools

Stück Piece	Bezeichnung Description	Sach-Nr. Part No.	Sony-Nr. Sony No.
1	Testband / Alignment Tape WR 5-1 C P	75987-561.62	8-967-995-07
1	Testband / Alignment Tape WR 5-6 C	75987-526.56	8-967-995-17
1	Testband / Alignment Tape WR 5-5 CSP	75987-526.57	8-967-995-47
1	Testband / Alignment Tape WR 5-4 CL	75987-526.58	8-967-995-56
1	Farbtestbild für Lichtbox / Colour Chart for Pattern Box	—	J-6020-250-A
1	Lichtbox / Pattern box PTB-500	—	J-6029-140-A
1	Filter / Filter for colour temperature correction (C14)	75987-536.43	J-6080-058-A
1	ND-Filter / ND Filter (0.4)	75987-532.02	J-6080-806-A
1	ND-Filter / ND Filter (0.1)	75987-532.03	J-6080-807-A
2	ND-Filter / ND Filter (1.0)	75987-532.04	J-6080-808-A
1	ND-Filter / ND Filter (0.3)	75987-536.44	J-6080-818-A
1	Bedieneinheit für Einstellarbeiten (RM 95B) / Adjustment Remote Control	75987-561.68	J-6082-053-B
1	GRUNDIG-Testbildsatz / GRUNDIG-Set of Test Charts	75987-358.56	—
1	Schwarz-weiß Testbild / Black-white Test Pattern (1189mm x 841mm)	—	—
1	Verlängerungskabel / Extension Cable (10P) 1,0mm	75987-536.51	J-6082-064-A
1	Verlängerungskabel / Extension Cable (16P) 0,8mm	75981-274.01	J-6082-136-A
1	Verlängerungskabel / Extension Cable (20P) 0,5mm	75981-274.03	J-6082-138-A
1	Messadapter für das Kamerateil / Measuring Pin for Camera Section	75981-274.06	J-6082-139-A
1	Verlängerungskabel / Extension Cable (10P) 0,8mm (neu! / new!)	75981-297.01	J-6082-150-A
1	Messadapter für den Monitor / Measuring Pin for Viewfinder Section (neu! / new!)	75981-297.02	J-6082-151-A
1	Verlängerungskabel / Extension Cable (6P) 1,5mm	75981-291.53	J-6082-152-A
1	Verlängerungskabel / Extension Cable (30P) 0,8mm	75981-282.01	J-6082-167-A
1	Verlängerungskabel / Extension Cable (21P) 0,5mm	75981-284.03	J-6082-176-A
1	Verlängerungskabel / Extension Cable (42P) 0,8mm	75981-290.06	J-6082-195-A
1	Verlängerungskabel / Extension Cable (20P) 0,8mm	75981-290.07	J-6082-196-A

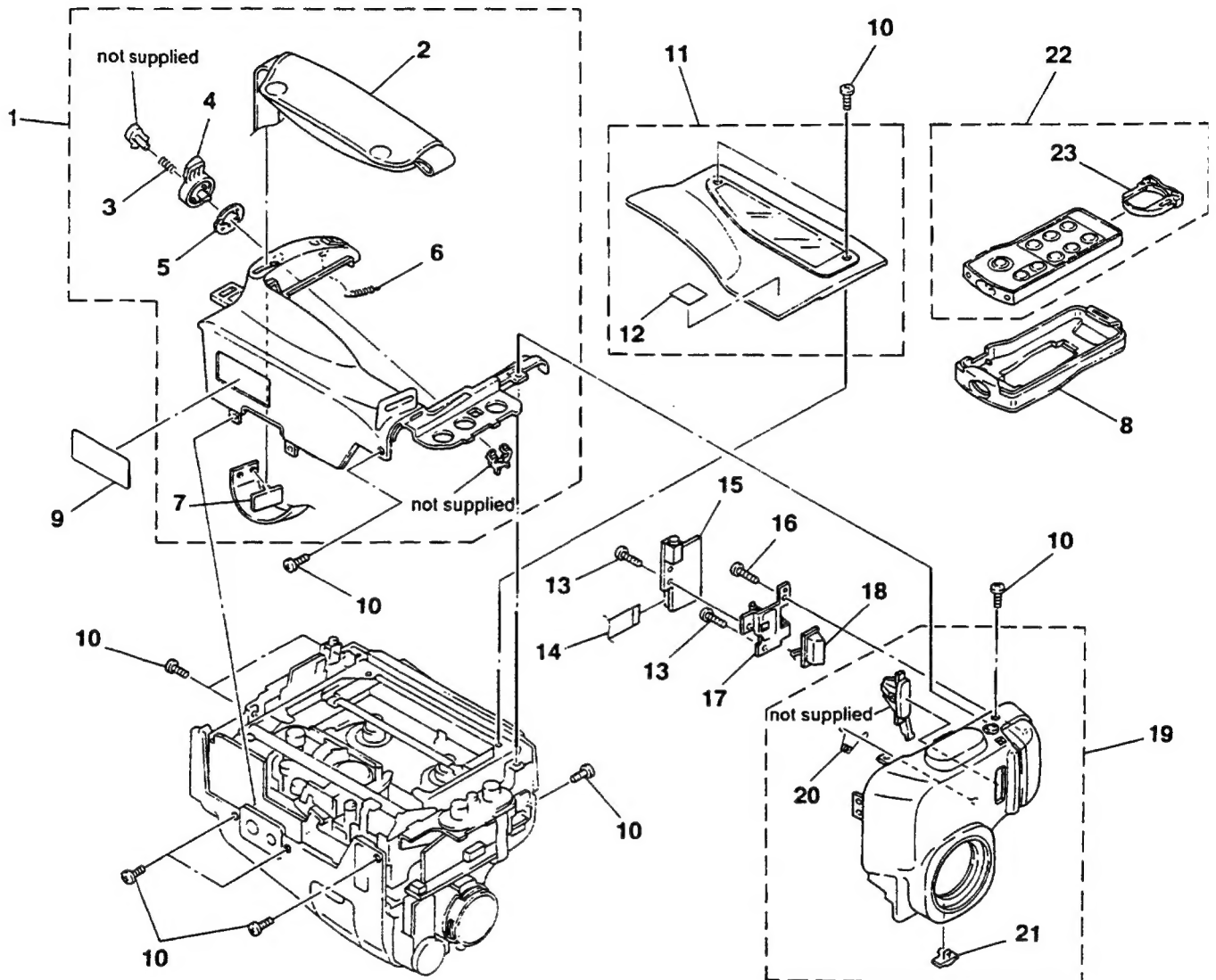
Die Servicemittel für die Mechanik des Camcorders LC 345 E sind im Service Manual (Sach-Nr. 72010-512.16) A-Mechanik aufgelistet.

The Service Jigs and Tools for the mechanic of the camcorder LC 345 E are listed in the Service Manual (Part No. 72010-512.16) for the A-Mechanic.

Explosionszeichnungen / Exploded Views

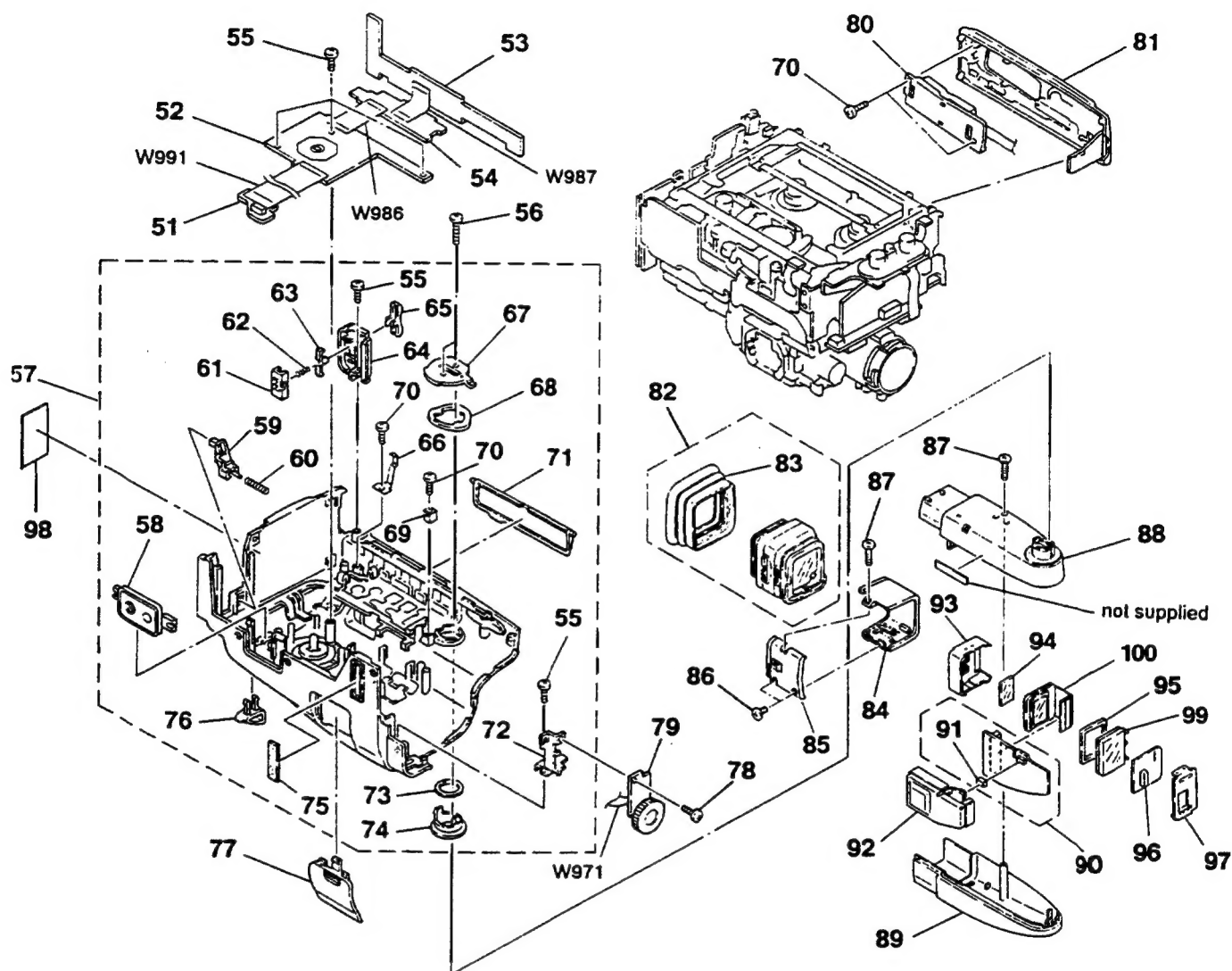
Linkes Gehäuseteil / Cabinet (L) and F Panel Assemblies

1



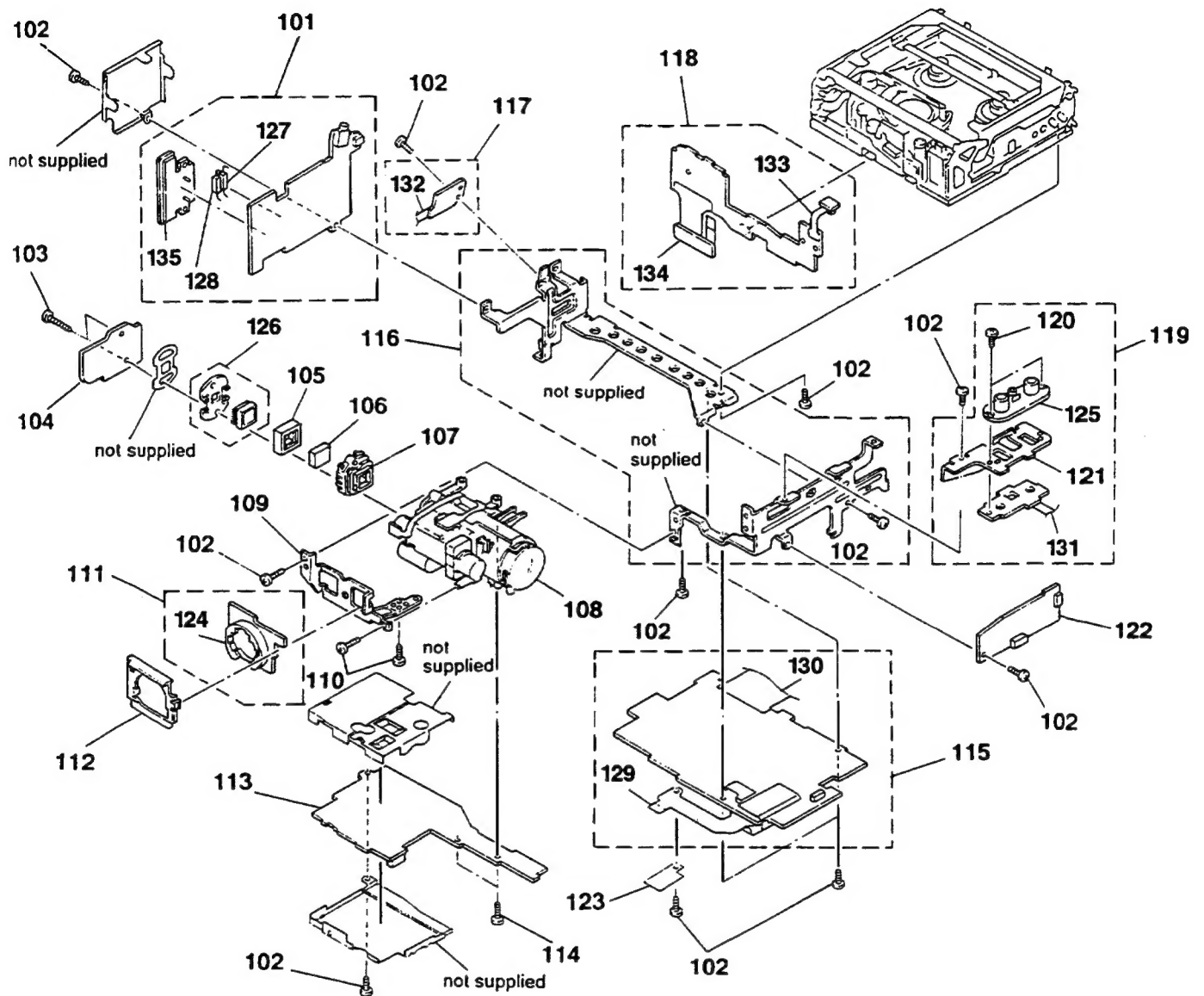
Rechtes Gehäuseteil / Cabinet (R) and EVF Assemblies

2



Hauptplatten / Main Board Assembly

3



GRUNDIGErsatzteilliste
List of spare parts

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LC 345 E

SACH-NR. / PART NO.: 75.8590-1000
BESTELL-NR. / ORDER NO.: G.MD 7300

POS. NR. POS. NO.	ABB. NR. FIG. NO.	SACHNUMMER PART NUMBER	ANZ. QUA.	BEZEICHNUNG D	DESCRIPTION GB
0001.000	1	75981-290.05		GEHAEUSETTEIL, LINKS	HOUSING PART, LEFT
0002.000	1	75987-535.08		HALTERIEMEN	HAND STRAP
0003.000	1	75987-535.22		DRUCKFEDER	PRESSURE SPRING
0004.000	1	75981-274.09		KNOPF, STAND-BY	KNOB, STAND-BY
0005.000	1	75987-535.25		FEDER	SPRING
0007.000	1	75981-274.10		HALTER	HOLDER
0008.000	1	75981-274.18		HALTER	HOLDER
0010.000	1	75987-560.60	7	SCHRAUBE M2	SCREW M2
0011.000	1	75981-297.07		CASSAETTENFACHDECKEL	LID CASSETTE
0013.000	1	75987-560.50	2	SCHRAUBE M2X6	SCREW M2X6
0014.000	1	75981-290.08		FLEXIBLE LEITUNG	FLEXIBLE CABLE
0015.000	1	75981-290.09		MIKROFONVERSTAERKER, MA149	P.C. BOARD ASSY
0018.000	1	75981-290.10		MIKROFON	MICROPHONE
0019.000	1	75981-290.03		GEHAEUSEVORDERTEIL	CABINET FRONT
0020.000	1	75981-290.11		SCHENKELFEDER	LEG SPRING
0021.000	1	75981-290.12		KNOPF	KNOB
0022.000	1	75981-273.01		FERNBEDIENUNG RC 8-4	REMOTE CONTROL
0023.000	1	75981-284.20		BATTERIEFACHDECKEL	BATTERY COMP. COVER
0051.000	2	75981-290.13		ADAPTERPLATTE, CN-65	BOARD LINK, CN-65
0052.000	2	75981-290.14		BEDIENPLATTE CAMERAPROGR. CF-32	CAMERA FUNCTION SWITCH, CF-32
0053.000	2	75981-290.15		BEDIENPLATTE, REC. VK-27	VTR FUNCTION SWITCH, VK-27
0054.000	2	75981-290.16		BEDIENPL. CAMERA, ED-35	VTR FUNCTION CAMERA, ED-35
0055.000	2	75987-560.50	2	SCHRAUBE M2X6	SCREW M2X6
0057.000	2	75981-297.06		GEHAEUSETTEIL RECHTS,	HOUSING PART, RIGHT
0058.000	2	75981-273.08		PLATTE (M.STATIVGEWINDE)	PLATE (W.TRIPOD THREAD)
0059.000	2	75981-290.17		VERRIEGELUNG	LOCKING
0060.000	2	75981-274.24		DRUCKFEDER	PRESSURE SPRING
0062.000	2	75987-560.17		DRUCKFEDER	PRESSURE SPRING
0063.000	2	75981-283.94		TASTE	KEY
0064.000	2	75981-290.18		ABDECKUNG	COVER
0065.000	2	75981-282.50		TASTE	KEY
0071.000	2	75981-290.19		DECKEL	LID
0076.000	2	75981-290.20		KNOPF, BATTERIE	KNOB, BATTERY
0077.000	2	75981-290.21		BATTERIEDECKEL, LITHIUM	BATTERY LID, LITHIUM
0078.000	2	75987-562.39		SCHRAUBE M2X3	SCREW M2X3
0079.000	2	75981-290.22		FOKUS-SCHALTERPL. MF-191	MANUAL FOCUS SWITCH MF-191
0080.000	2	75981-290.23		WIPPE	ROCKER
0081.000	2	75981-290.01		ABDECKUNG	COVER
0082.000	2	75981-297.37		OKULAR	OCULAR
0083.000	2	75981-297.09		AUGENMUSCHEL	EYE CAP
0084.000	2	75981-297.04		SCHIEBER (OBEN), MONITOR	SLIDE UPPER
0085.000	2	75981-297.05		SCHIEBER (UNTEN), MONITOR	SLIDE LOWER
0088.000	2	75981-297.03		GEHAEUSETTEIL (L), MONITOR	HOUSING PART (L) MONITOR
0089.000	2	75981-297.08		GEHAEUSETTEIL (R), MONITOR	HOUSING PART (R) MONITOR
0090.000	2	75981-297.10		DRUCKPLATTE, CL-29	P.C. BOARD ASSY, CL-29
0091.000	2	75981-297.11		ZWISCHENSTECKER	CONNECTOR BOARD TO BOARD
0092.000	2	75981-297.12	Δ	DRUCKPLATTE, IV-10	P.C. BOARD ASSY, IV-10
0093.000	2	75981-297.13		HALTER	HOLDER
0094.000	2	75981-297.14		FILTER (FOLIE)	FILTER
0095.000	2	75981-297.15		SCHEIBE	WASHER
0096.000	2	75981-297.16		DRUCKPLATTE, LB-33	P.C. BOARD ASSY, LB-33
0097.000	2	75981-297.17		HALTER	HOLDER
0099.000	2	75981-297.18	Δ	FLUORESCENT-ROEHRE BL 991	TUBE FLUORESCENT BL991
0100.000	2	75981-297.19		LC-DISPLAY LCD 901	LCD 901
0101.000	3	75981-290.28	Δ	NETZTEILPLATTE, DD-48	POWER, DD-48
0102.000	3	75987-562.39	12	SCHRAUBE M2X3	SCREW M2X3
0104.000	3	75981-290.29		CCD-PLATTE, CD-92	CCD IMAGER, CD-92

POS. NR. POS. NO.	ABB. NR. FIG. NO.	SACHNUMMER PART NUMBER	ANZ. QUA.	BEZEICHNUNG (D)	DESCRIPTION (GB)
0106.000	3	75981-282.71		IR-FILTER	IR-FILTER
0108.000	3	75981-290.30		OPTIK KPL.	OPTIC CPL.
0110.000	3	75987-560.50		SCHRAUBE M2X6	SCREW M2X6
0111.000	3	75981-290.31		STUETZBATTERIE-PL. LI-44	LITHIUM BATTERY HOLDER , LI-44
0112.000	3	75981-290.32		HALTER, LITHIUM	HOLDER, LITHIUM
0113.000	3	75981-290.33		CAMERAPLATTE, VC-122	CAMERA, LENS DRIVE, VC-122
0114.000	3	75987-562.42		SCHRAUBE B2X5	SCREW B2X5
0115.000	3	75981-297.20		DRUCKPLATTE, VS-95	P.C. BOARD ASSY, VS-95
0117.000	3	75981-290.35		BEDIENPLATTE, START/STOP SW-205	CAMERA FUNCTION SWITCH SW-205
0118.000	3	75981-290.36		KONTROLLPL.MECHANIK, SL-27	MECH CONTROL, SL-27
0119.000	3	75981-290.37		AV-BUCHSENPLATTE, JK-91	VIDEO/AUDIO JACK, JK-91
0122.000	3	75981-290.38		TONPLATTE, AU-138	AFM AUDIO, AU-138
0124.000	3	75987-526.75		HALTER-BATTERIE H 516	HOLDER BATTERY H 516
0125.000	3	75987-580.74		ANSCHLUSSBUCHSE J 517	CONNECTING SOCKET J 517
0126.000	3	75981-288.34		CCD-EINHEIT IC 875	CCD - UNIT IC 875
0127.000	3	75987-525.61	Δ	SICHERUNG PRF1600 PS 901	FUSE PS 901
0128.000	3	75987-525.61	Δ	SICHERUNG PRF1600 PS 902	FUSE PS 902
0129.000	3	75981-290.40		FLEXIBLE LEITUNG, FP-588 W001	FLEXIBLE CABLE, FP-588 W001
0130.000	3	75981-290.41		FLEXIBLE LEITUNG, FP-572 W005	FLEXIBLE CABLE, FP-572 W005
0131.000	3	75981-290.42		FLEXIBLE LEITUNG, FCC-85 W517	FLEXIBLE CABLE, FCC-85 W517
0132.000	3	75981-290.43		FLEXIBLE LEITUNG, FCC-92 W519	FLEXIBLE CABLE, FCC-92 W519
0133.000	3	75981-282.75		FLEXIBLE PLATTE, FP-437 W521	FLEXIBLE PLATE, FP-437 W521
0134.000	3	75981-290.44		FLEXIBLE LEITUNG, FP-589 W522	FLEXIBLE CABLE, FP-589 W522
0135.000	3	75981-290.39		KONTAKTPLATTE J901	CONTACT PLATE J901
0151.000	4	75981-282.76		CASSETTENSCHACHT	CASSETTE COMPARTMENT
0153.000	4	75981-282.77		SCHENKELFEDER	LEG SPRING
0154.000	4	75981-282.78		DAEMPfung	DAMPING OR ATTENUATION
0155.000	4	75987-527.43		SCHEIBE	WASHER
0157.000	4	75981-282.79		KOPFREINIGER KPL.	HEAD CLEANER CPL.
0158.000	4	75981-282.81		ZUGFEDER	TENSION SPRING
0159.000	4	75987-527.48		SCHEIBE	WASHER
0160.000	4	75981-282.82		KOPFREINIGERBUERSTE	HEAD CLEANER BRUSH
0161.000	4	75981-282.83		PLATTE	PLATE
0201.000	5	75981-282.84		WICKELTELLER	SPOOL CARRIER
0203.000	5	75981-282.85		ANDRUCKROLLE	PINCH ROLLER
0206.000	5	75981-282.86		UMLENKROLLE	PIVOTING ROLLER
0209.000	5	75981-282.87		HEBEL	LEVER
0210.000	5	75987-527.44	2	SCHEIBE	WASHER
0211.000	5	75981-282.88		ZAHRNAD	GEAR WHEEL
0212.000	5	75981-282.89		HEBEL	LEVER
0213.000	5	75987-552.84		SCHEIBE	WASHER
0214.000	5	75981-282.90		ZAHRNAD	GEAR WHEEL
0216.000	5	75981-282.91		RIEGEL	LATCH, BOLT
0217.000	5	75981-282.92		WICKELTELLER	SPOOL CARRIER
0219.000	5	75981-282.93		SCHNUR	CORD
0220.000	5	75981-282.94		BREMSHEBEL	BRAKE LEVER
0221.000	5	75981-282.95		ZUGFEDER	TENSION SPRING
0222.000	5	75981-282.96		UMLENKBOLZEN	THREADING BOLT ASSEMBLY
0223.000	5	75981-282.97		SCHENKELFEDER	LEG SPRING
0224.000	5	75981-282.98		BREMSHEBEL	BRAKE LEVER
0226.000	5	75981-282.99		CHASSIS KPL. LS	CHASSIS CPL. LS
0227.000	5	75981-283.00		FUEHRUNG	GUIDE
0228.000	5	75981-283.01		UMLENKROLLE	PIVOTING ROLLER
0230.000	5	75981-283.02		HEBEL KPL.	LEVER
0231.000	5	75981-283.03		SCHIEBER	SLIDE
0233.000	5	75981-283.04		SCHALTER S002	SWITCH S002
0250.000	6	75981-283.12		BANDTROMMEL KPL. M901	TAPE DRUM CPL. M901
0251.000	6	75981-283.05		KOPFRAD	HEAD WHEEL
0252.000	6	75981-283.06		BLATTFEDER	LEAF SPRING
0253.000	6	75981-283.07		UMLENKHEBEL, TG7	REVERSE LEVER
0256.000	6	75981-283.08		HEBEL	LEVER
0259.000	6	75981-283.09		HEBEL	LEVER
0261.000	6	75981-283.10		BANDFUEHRUNGSBOLZEN	TAPE GUIDE PIN
0262.000	6	75981-283.11		DRUCKFEDER	PRESSURE SPRING
0263.000	6	75987-561.01		SCHRAUBE	SCREW
0264.000	6	75981-283.13		CAPSTAN-MOTOR M902	CAPSTAN MOTOR M902
0265.000	6	75981-283.14		FAEDEL MOTOR M903	LOADING MOTOR M903
0301.000	7	75981-283.15		HEBEL	LEVER

POS. NR. POS. NO.	ABB. NR. FIG. NO.	SACHNUMMER PART NUMBER	ANZ. QUA.	BEZEICHNUNG (D)	DESCRIPTION (GB)
0302.000	7	75987-562.48		SCHRAUBE	SCREW
0303.000	7	75981-283.16		HEBEL	LEVER
0304.000	7	75987-552.84		SCHEIBE	WASHER
0306.000	7	75981-283.17		HEBEL	LEVER
0307.000	7	75981-283.18		DRUCKFEDER	PRESSURE SPRING
0308.000	7	75981-283.19		ANTRIEBSRAD	DRIVE WHEEL
0309.000	7	75981-283.20		ANTRIEBSRIEMEN	DRIVE BELT
0310.000	7	75981-283.21		RIEMENSCHIEBE	BELT PULLEY
0311.000	7	75981-283.22		SCHIEBER	SLIDE
0312.000	7	75981-283.23		KURVENRAD	CURVED WHEEL
0313.000	7	75981-283.24		HEBEL	LEVER
0315.000	7	75981-283.25		GRUNDSCHASSIS	MAIN CHASSIS
0317.000	7	75981-283.26		HEBEL	LEVER
0318.000	7	75981-283.27		HEBEL	LEVER
0319.000	7	75981-283.28		ZAHNRAD	GEAR WHEEL
0320.000	7	75981-283.29		ZAHNRAD	GEAR WHEEL
0321.000	7	75981-283.30		FLEXIBLE PLATTE FP-444	FLEXIBLE CABLE, FP-444
0324.000	7	75981-283.31		SCHALTER S001	SWITCH S001
0325.000	7	75981-283.32		SCHALTER S005	SWITCH S005
0326.000	7	75981-283.97		FLEXIBLE LEITUNG, FP-442	FLEXIBLE CABLE, FP-442
0401.000	8	75981-290.30		OPTIK KPL.	OPTIC CPL.
0402.000	8	75981-284.45		SCHIEBEREGLER	SLIDING-CONTROL
0404.000	8	75981-290.45		FLEXIBLE LEITUNG	FLEXIBLE CABLE
0405.000	8	75981-290.46		OPTOKOPPLER	OPTOCOUPLER
0408.000	8	75981-290.47		BLENDEINHEIT M904	LENS UNIT M904
0409.000	8	75981-290.48		MOTOR-FOCUS M905	MOTOR-FOCUS M905
0410.000	8	75981-290.49		MOTOR-ZOOM M906	MOTOR-ZOOM M906
				ZUBEHOER	ACCESSORIES
		75981-281.51		NETZTEIL NA 8-3	POWER SUPPLY NA 8-3
		75987-527.90		ACCU BP 8-1	ACCU BP 8-1
		75987-553.11		MODULATOR M 81	MODULATOR M 81
		75981-291.71		SCHULTERRIEMEN SH 8-1	SHOULDER BELT SH 8-1
		75981-273.01		FERNBEDIENUNG RC 8-4	REMOTE CONTROL RC 8-4
		75981-274.18		HALTER FERNBEDIENUNG	REMOTE CONTROL HOLDER
		72010-512.75		BEDIENUNGSANLEITUNG GB	INSTRUCTION MANUAL GB
		72010-512.76		BEDIENUNGSANLEITUNG D / F / E	INSTRUCTION MANUAL D / F / E
		72010-512.77		BEDIENUNGSANLEITUNG I / NL / S	INSTRUCTION MANUAL I / NL / S
		72010-513.10		SERVICE MANUAL	SERVICE MANUAL

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG DESCRIPTION	(D) (GB)
	75981-283.74 75987-581.31 75987-536.06	BUZZER, PIEZOELECTRIC SP991 BUCHSE J902 BUCHSE J551	
CT 801	75987-559.14	TRIMMER	
D 001	75987-525.86	DIODE 1 SS 226	
D 101	75987-559.68	DIODE FC 805	
D 102	75987-521.15	DIODE IMN 10	
D 103	75987-458.80	DIODE 1 SS 250	
D 121	75981-286.52	DIODE MA 142 WK	
D 152	75987-586.69	DIODE MA 142 WA	
D 159	75981-286.52	DIODE MA 142 WK	
D 160	75981-286.52	DIODE MA 142 WK	
D 161	75987-458.27	DIODE MA 110	
D 162	75981-286.52	DIODE MA 142 WK	
D 163	75981-286.52	DIODE MA 142 WK	
D 401	75987-458.42	DIODE MA 728	
D 402	75981-286.52	DIODE MA 142 WK	
D 403	75987-458.27	DIODE MA 110	
D 552	75987-458.27	DIODE MA 110	
D 875	75987-534.09	DIODE 1 SS 123	
D 876	75987-458.27	DIODE MA 110	
D 877	75981-273.15	DIODE 1 SS 181	
D 878	75987-458.27	DIODE MA 110	
D 901	75981-297.21	DIODE GL 3 PR 43 BOARD CL-29	
D 901	75987-559.68	DIODE FC 805 BOARD DD-48	
D 902	75987-525.90	DIODE GL 1 HD 51	
D 903	75981-297.22	DIODE MA 8033 L	
D 904	75981-273.15	DIODE 1 SS 181	
D 905	75981-297.23	DIODE 1 T 363 BOARD CL-29	
D 905	75987-458.27	DIODE MA 110	
D 906	75987-458.27	DIODE MA 110	
D 907	75987-536.09	DIODE MA 8082 M	
D 908	75987-536.09	DIODE MA 8082 M	
D 971	75987-458.27	DIODE MA 110	
D 976	75987-458.27	DIODE MA 110	
D 986	75987-458.27	DIODE MA 110	
D 987	75987-459.16	DIODE MA 121	
D 992	75987-458.27	DIODE MA 110	
CF 151	75981-273.51	FILTER	
FL 121	75987-525.13	FILTER 4.43MHZ	
FL 152	75987-559.24	FILTER	
FL 153	75987-525.12	FILTER 4.43MHZ	
FL 154	75987-581.36	FILTER	
FL 155	75987-559.23	FILTER	
FL 401	75981-284.67	FILTER	
FL 701	75987-581.48	FILTER, LOW PASS	
FL 702	75987-581.49	FILTER	
IC 001	75987-526.26	IC CXA 1202 R	
IC 003	75981-273.70	IC CXA 1211 M	
IC 101	75981-297.31	IC MB 3776 APNF-G-BND	
IC 102	75987-560.08	IC LM 393 D	
IC 103	75987-560.10	IC LM 358 D	
IC 121	75987-526.45	IC CXA 1203 N	
IC 151	75981-290.65	IC CXA 1207 AR	
IC 152	75987-559.82	IC CXA 1208 R	
IC 154	75987-559.85	IC CXL 1506 M	
IC 155	75981-273.70	IC CXA 1211 M	
IC 156	75981-288.40	IC M 62353 GP	
IC 158	75981-288.40	IC M 62353 GP	
IC 159	75981-273.93	IC CXA 1452N	
IC 401	75981-290.66	IC S 8420 AF	
IC 402	75981-290.67	IC CXP 80624-428 R	

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG DESCRIPTION	(D) (GB)
IC 403	75981-290.68	IC UPD 75316 GF-318-3B9	
IC 404	75981-290.69	IC CXA 1481 AR	
IC 405	75981-290.70	IC BR 9011 BF-RE 2	
IC 406	75981-290.71	IC UPD 6456 GS 620	
IC 407	75987-559.95	IC UPD 7564 G 540	
IC 408	75981-272.11	IC MCD 004 BM	
IC 409	75987-560.11	IC TL 1596 CDB	
IC 410	75981-290.72	IC MPC 1720 VM	
IC 521	75981-283.82	IC LB 8111 V	
IC 551	75987-553.58	IC LA 7293 M-TE-L	
IC 601	75987-581.40	IC CXA 1488 R	
IC 602	75981-283.71	IC RS 20 E-T	
IC 701	75987-511.62	IC TC 7 SU 04 FT 85 R	
IC 702	75981-284.69	IC MB 88346 BPFV	
IC 703	75987-528.70	IC NJM 2234 M	
IC 704	75981-273.78	IC CXD 2101 AR	
IC 705	75981-283.57	IC CXD 2103 AR-T 5	
IC 706	75981-290.57	IC CXD 2104 BN	
IC 707	75981-284.70	IC CXD 2100 AQ	
IC 709	75981-290.58	IC CXP 80624-434 R	
IC 712	75981-290.59	IC BR 9021 AF	
IC 801	75981-283.59	IC CXD 1257 AR-T 5	
IC 802	75981-283.60	IC CXA 1507 BR	
IC 803	75981-273.71	IC CXA 1399Q	
IC 804	75981-273.74	IC CXD 1250 N	
IC 805	75981-273.73	IC CXA 1390 AR	
IC 851	75987-521.02	IC NJM 3414 M	
IC 852	75987-560.09	IC LM 324 D	
IC 853	75981-290.60	IC MPC 1724 VMEL	
IC 854	75981-273.96	IC LB 1830 M	
IC 856	75987-560.10	IC LM 358 D	
IC 875	75981-288.34	CCD-EINHEIT	
IC 901	75981-297.24	IC IR 3 P 961 BOARD CL-29	
IC 901	75981-283.76	IC MB 3785 APFV-G-BND-ER BOARD DD-48	
IC 902	75981-297.25	IC ETM 3011 FOA	
IC 903	75981-297.26	IC ETM 3021 FOA	
L 001	75987-525.32	SPULE 10UH	
L 002	75981-273.39	CHIP-SPULE 220UH	
L 003	75981-273.39	CHIP-SPULE 220UH	
L 005	75981-290.73	CHIP-SPULE 22UH	
L 007	75987-533.10	CHIP SPULE 10UH	
L 008	75987-521.31	CHIP SPULE 220UH	
L 009	75987-525.31	SPULE 8.2UH	
L 010	75987-535.98	CHIP SPULE 120 UH	
L 011	75987-581.41	SPULE 330UH	
L 012	75987-525.37	SPULE 33UH	
L 013	75987-525.47	SPULE 180UH	
L 015	75987-525.32	SPULE 10UH	
L 101	75987-525.51	SPULE 47UH	
L 102	75987-525.51	SPULE 47UH	
L 103	75987-525.50	SPULE 10UH	
L 104	75987-553.19	CHIP SPULE 22 UH	
L 121	75987-525.32	SPULE 10UH	
L 150	75987-525.35	SPULE 18UH	
L 152	75987-525.36	SPULE 22UH	
L 154	75987-525.40	SPULE 56UH	
L 155	75987-525.40	SPULE 56UH	
L 160	75987-533.10	CHIP SPULE 10UH	
L 161	75987-525.36	SPULE 22UH	
L 162	75987-581.41	SPULE 330UH	
L 163	75987-525.25	SPULE 820UH	
L 164	75987-525.47	SPULE 180UH	
L 169	75987-525.42	SPULE 82UH	
L 170	75987-525.32	SPULE 10UH	
L 171	75987-525.35	SPULE 18UH	
L 175	75987-525.43	SPULE 100UH	
L 176	75987-525.46	SPULE 150UH	

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG DESCRIPTION	(D) (GB)
L 177	75987-533.10	CHIP SPULE 10UH	
L 178	75987-559.36	CHIP SPULE 47 UH	
L 179	75987-559.30	CHIP SPULE 6,8 UH	
L 180	75987-525.43	SPULE 100UH	
L 181	75987-525.43	SPULE 100UH	
L 182	75987-535.98	CHIP SPULE 120 UH	
L 185	75987-533.10	CHIP SPULE 10UH	
L 186	75987-559.35	SPULE 1 UH	
L 401	75981-290.80	CHIP-SPULE 4,7UH	
L 402	75987-533.10	CHIP SPULE 10UH	
L 403	75987-559.36	CHIP SPULE 47 UH	
L 404	75987-533.10	CHIP SPULE 10UH	
L 405	75987-533.10	CHIP SPULE 10UH	
L 406	75987-533.10	CHIP SPULE 10UH	
L 407	75987-559.35	SPULE 1 UH	
L 571	75987-525.27	SPULE 1UH	
L 572	75987-525.27	SPULE 1UH	
L 601	75987-525.35	SPULE 18UH	
L 701	75981-273.38	CHIP-SPULE 10UH	
L 703	75987-559.35	SPULE 1 UH	
L 704	75981-273.38	CHIP-SPULE 10UH	
L 705	75981-273.44	SPULE 1UH	
L 706	75987-559.36	CHIP SPULE 47 UH	
L 708	75981-273.44	SPULE 1UH	
L 710	75987-559.35	SPULE 1 UH	
L 711	75987-533.10	CHIP SPULE 10UH	
L 712	75987-559.35	SPULE 1 UH	
L 714	75981-273.38	CHIP-SPULE 10UH	
L 715	75987-533.10	CHIP SPULE 10UH	
L 717	75987-533.10	CHIP SPULE 10UH	
L 720	75981-273.38	CHIP-SPULE 10UH	
L 721	75987-525.41	SPULE 68UH	
L 801	75987-525.50	SPULE 10UH	
L 802	75981-273.38	CHIP-SPULE 10UH	
L 803	75987-533.10	CHIP SPULE 10UH	
L 804	75987-533.10	CHIP SPULE 10UH	
L 851	75987-533.10	CHIP SPULE 10UH	
L 853	75987-525.51	SPULE 47UH	
L 875	75981-273.16	CHIP-SPULE 100UH	
L 901	75981-273.21	CHIP-SPULE 4.7UH	
L 902	75981-297.27	SPULE 2,2UH	
L 903	75981-297.28	SPULE 82UH BOARD CL-29	
L 903	75981-273.22	SPULE 10UH BOARD DD-48	
L 904	75981-292.80	SPULE 12UH BOARD CL-29	
L 904	75981-273.22	SPULE 10UH BOARD DD-48	
L 905	75981-273.99	SPULE 27UH BOARD CL-29	
L 905	75981-273.22	SPULE 10UH BOARD DD-48	
L 906	75981-273.23	SPULE 22UH	
L 909	75981-273.21	CHIP-SPULE 4.7UH	
L 910	75981-273.21	CHIP-SPULE 4.7UH	
L 911	75981-273.21	CHIP-SPULE 4.7UH	
L 912	75981-273.20	SPULE 47UH	
L 913	75981-273.20	SPULE 47UH	
L 914	75981-283.78	CHIP-SPULE 330UH	
L 915	75981-283.78	CHIP-SPULE 330UH	
L 916	75981-273.21	CHIP-SPULE 4.7UH	
PS401 ▲	75981-284.74	SI.-WIDERST.0,4A	
PS402 ▲	75981-273.47	SICHERUNG	
Q 001▲	75987-526.03	TRANS.2 SA 1162	
Q 003	75981-290.54	TRANS.2 SA 1586 YG	
Q 008	75981-279.92	TRANS.2 SD 1819 AR	
Q 010	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 019▲	75987-553.45	TRANS.2 SC 1623	
Q 020▲	75987-553.45	TRANS.2 SC 1623	
Q 021	75987-434.50	TRANS.2 SA 1576 QR	
Q 022	75981-290.54	TRANS.2 SA 1586 YG	

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG DESCRIPTION	(D) (GB)
Q 024	75987-525.94	TRANS.2 SC 2223 F 13	
Q 025	75981-290.74	TRANS.RN 2302	
Q 026	75981-279.92	TRANS.2 SD 1819 A-R	
Q 101	75981-297.32	TRANS.2 SD 1622 S	
Q 102	75987-536.23	TRANS.XN 4113	
Q 103	75987-536.22	TRANS.XN 4213	
Q 104	75987-525.91	TRANS.2 SC 1623	
Q 105	75987-434.50	TRANS.2 SA 1576 QR	
Q 106	75981-297.33	TRANS.2 SK 1299 S	
Q 107	75987-480.68	TRANS.-WIDERST.XN 4401	
Q 108	75987-525.91	TRANS.2 SC 1623	
Q 109	75987-434.50	TRANS.2 SA 1576 QR	
Q 121	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 123	75987-459.47	TRANS.-WIDERST.UN 5213	
Q 124	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 125	75981-273.56	TRANS.2 SC 4178	
Q 126	75981-279.92	TRANS.2 SD 1819 AR	
Q 151	75987-525.92	TRANS.2 SB 798	
Q 152	75981-279.92	TRANS.2 SD 1819 AR	
Q 154	75981-279.92	TRANS.2 SD 1819 AR	
Q 158	75981-279.92	TRANS.2 SD 1819 AR	
Q 160	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 161	75981-279.92	TRANS.2 SD 1819 AR	
Q 162	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 166	75981-290.54	TRANS.2 SA 1586 YG	
Q 168	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 170	75987-528.81	TRANS.XN 4312	
Q 171	75981-273.56	TRANS.2 SC 4178	
Q 174	75981-279.92	TRANS.2 SD 1819 AR	
Q 175	75981-279.92	TRANS.2 SD 1819 AR	
Q 176	75981-279.92	TRANS.2 SD 1819 AR	
Q 177	75981-290.54	TRANS.2 SA 1586 YG	
Q 178	75981-290.54	TRANS.2 SA 1586 YG	
Q 180	75987-459.48	TRANS.-WIDERST.UN 4215	
Q 182	75981-279.92	TRANS.2 SD 1819 AR	
Q 183	75987-459.56	TRANS.-WIDERST.UN 5115	
Q 184	75981-279.92	TRANS.2 SD 1819 AR	
Q 189	75981-279.92	TRANS.2 SD 1819 AR	
Q 191	75981-279.92	TRANS.2 SD 1819 AR	
Q 192	75981-279.92	TRANS.2 SD 1819 AR	
Q 194	75981-279.92	TRANS.2 SD 1819 AR	
Q 195	75981-290.54	TRANS.2 SA 1586 YG	
Q 196	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 199	75987-533.46	TRANS.2 SB 1295 UL 5	
Q 200	75981-290.62	TRANS.RN 1302	
Q 203	75981-290.54	TRANS.2 SA 1586 YG	
Q 204	75981-279.92	TRANS.2 SD 1819 AR	
Q 205	75987-459.47	TRANS.-WIDERST.UN 5213	
Q 207	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 208	75981-290.62	TRANS.RN 1302	
Q 210	75987-459.47	TRANS.-WIDERST.UN 5213	
Q 212	75981-290.54	TRANS.2 SA 1586 YG	
Q 214	75987-536.22	TRANS.XN 4213	
Q 219	75981-297.36	TRANS.2 SA 1677	
Q 220	75987-459.51	TRANS.-WIDERST.UN 5212	
Q 221	75987-536.22	TRANS.XN 4213	
Q 222	75981-279.92	TRANS.2 SD 1819 AR	
Q 223	75987-459.47	TRANS.-WIDERST.UN 5213	
Q 229	75981-290.54	TRANS.2 SA 1586 YG	
Q 230	75981-279.92	TRANS.2 SD 1819 AR	
Q 231	75981-290.54	TRANS.2 SA 1586 YG	
Q 232	75981-279.92	TRANS.2 SD 1819 AR	
Q 233	75981-279.92	TRANS.2 SD 1819 AR	
Q 234	75981-290.54	TRANS.2 SA 1586 YG	
Q 236	75981-290.75	TRANS.UN 511 E	
Q 237	75981-290.61	TRANS.2 SB 1462 Q	
Q 401	75987-459.59	TRANS.-WIDERST.UN 521 E	
Q 403	75987-459.49	TRANS.-WIDERST.UN 5113	
Q 405	75981-290.62	TRANS.RN 1302	
Q 409	75981-290.76	TRANS.2 SB 1574	

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG DESCRIPTION	(D) (GB)
Q 521	75987-480.69	TRANS.-WIDERST.XN 4501	
Q 551	75981-290.54	TRANS.2 SA 1586 YG	
Q 701	75981-273.68	TRANS.DTC 124 EE	
Q 702	75987-551.71	TRANS.XP 4601	
Q 703	75987-551.71	TRANS.XP 4601	
Q 704	75981-290.61	TRANS.2 SB 1462 Q	
Q 706	75981-290.50	TRANS.2 SD 2216 Q	
Q 707	75987-550.88	TRANS.-WIDERST.UN 9111	
Q 708	75981-290.50	TRANS.2 SD 2216 Q	
Q 709	75987-551.70	TRANS.XP 4501	
Q 801	75981-290.50	TRANS.2 SD 2216 Q	
Q 802	75987-551.69	TRANS.XP 4401	
Q 851	75981-290.50	TRANS.2 SD 2216 Q	
Q 852	75981-290.62	TRANS.RN 1302	
Q 853	75987-551.69	TRANS.XP 4401	
Q 875	75981-290.50	TRANS.2 SD 2216 Q	
Q 876	75987-551.70	TRANS.XP 4501	
Q 877	75981-273.18	TRANS.2 SK 1875 BL/VTE 85	
Q 901	75987-480.69	TRANS.-WIDERST.XN 4501 CL-29	
Q 901	75987-480.68	TRANS.-WIDERST.XN 4401 DD-48	
Q 902	75987-459.47	TRANS.-WIDERST.UN 5213	
Q 903	75981-273.27	TRANS.FP 102	
Q 904	75987-573.81	TRANS.2 SB 1122-S	
Q 905	75981-273.24	TRANS.FP 101	
Q 906	75981-273.24	TRANS.FP 101	
Q 907	75987-480.69	TRANS.-WIDERST.XN 4501	
Q 908	75987-526.06	TRANS.2 SB 1121	
Q 909	75987-526.06	TRANS.2 SB 1121	
Q 910	75981-290.52	TRANS.RN 2304	
R 073	75981-290.77	THERMISTOR, NTC	
R 113	75981-290.77	THERMISTOR, NTC	
R 151	75987-585.74	WIDERST.0 5% 1/8W	
R 243	75987-585.62	WIDERST.100OHM 5% 1/16W	
R 359	75987-585.74	WIDERST.0 5% 1/8W	
R 491	75987-585.74	WIDERST.0 5% 1/8W	
RV 101	75987-559.27	ESTR.2,2KOHM	
RV 102	75981-273.36	ESTR.10 KOHM	
RV 151	75987-535.86	ESTR.1 KOHM	
RV 901	75981-297.29	ESTR.22 KOHM	
RV 902	75987-536.41	ESTR.22 KOHM	
RV 903	75981-297.29	ESTR.22 KOHM	
RV 905	75987-535.91	ESTR.100 KOHM	
RV 906	75987-536.41	ESTR.22 KOHM	
RV 907	75987-536.41	ESTR.22 KOHM	
S 001	75981-283.31	SCHALTER	
S 002	75981-283.04	SCHALTER	
S 005	75981-283.32	SCHALTER	
S 519	75987-525.62	SCHALTER	
S 520	75987-525.72	SCHALTER	
S 901	75981-290.53	SCHALTER	
S 971	75981-290.55	SCHALTER	
S 972	75981-290.56	SCHALTER	
S 973	75981-290.53	SCHALTER	
S 976	75981-283.93	SCHALTER	
S 977	75981-290.63	SCHALTER	
S 978	75981-290.64	SCHALTER	
S 979	75981-283.93	SCHALTER	
S 980	75981-283.93	SCHALTER	
S 981	75981-290.64	SCHALTER	
S 983	75981-283.93	SCHALTER	
S 984	75981-283.93	SCHALTER	
S 986	75987-581.18	SCHALTER	
S 987	75981-283.69	SCHALTER	
S 988	75987-581.18	SCHALTER	
S 989	75981-283.69	SCHALTER	
S 990	75987-581.18	SCHALTER	

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG DESCRIPTION	(D) (GB)
S 991	75981-283.69	SCHALTER	
S 993	75981-283.69	SCHALTER	
S 995	75981-283.69	SCHALTER	
S 996	75981-283.69	SCHALTER	
S 997	75981-290.51	SCHALTER	
T 101	75981-297.34	TRAFO	
T 102	75981-297.35	TRAFO	
T 901	75981-283.80	TRANSFORMER	
X 151	75981-273.48	QUARZ	
X 401	75981-284.77	QUARZ 4,19 MHZ	
X 402	75987-563.56	QUARZ 32.768 KHZ	
X 403	75981-273.49	QUARZ	
X 404	75981-283.67	QUARZ 700 KHZ	
X 701	75981-283.68	QUARZ 10 MHZ	
X 801	75981-290.78	QUARZ 28.375 MHZ	
X 901	75981-297.30	QUARZ 4,43 MHZ	

CCD-TR333E

RMT-507

SERVICE MANUAL



AEP Model
UK Model
E Model

**Video8
Handycam**

A MECHANISM

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only available.

CCD-TR333E is based on model CCD-TR303E/TR303EP.

[Main differences]

- Color View Finder is carried.

In this service manual, only the differences from CCD-TR303E/TR303EP are mentioned.
When servicing, see the CCD-TR303E/TR303EP service manual(9-973-321-11) with this.

**For MECHANISM ADJUSTMENTS, refer to the
"8 mm Video MECHANICAL ADJUSTMENT
MANUAL IV" (9-973-199-11).**

Video Camera Recorder

SPECIFICATIONS

System

Video recording system	Two rotary heads, Helical scanning FM system
Audio recording system	Two rotary heads, Helical scanning FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP mode: Approx. 20.051 mm (13/16 inch)/s LP mode: Approx. 10.058 mm (13/32 inch)/s
Recording time	SP mode: 1 h and 30 min (P5-90) LP mode: 3 h (P5-90)
Playback time	SP mode: 1 h and 30 min (P5-90) LP mode: 3 h (P5-90)
Fast-forward/rewind time	Approx. 6.5 min (P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (colour)
Lens	Combined 10× power zoom lens f=6.2 to 62 mm (1/4 to 2 1/2 inches) F 1.6 to F 2.9 (45 to 450 mm (1 13/16 to 17 5/8 inches) when converted to a 35-mm still camera) Filter diameter 37 mm (1 1/2 inches)

Autofocus system	TTL autofocus system inner focus wide macro system
Colour temperature	Automatic
Minimum illumination	2 lx (F 1.6)
Illumination range	2 lx to 100,000 lx (0.2 to 9,290 footcandles)
Recommended illumination	More than 100 lx (9.3 footcandles)

Output connector

Video output	Phono jack, 1 Vp-p, 75 Ω unbalanced sync negative
Audio output	Phono jack -7.5 dBs (at impedance 47 kΩ impedance less than 2.2 kΩ)
RFU DC OUT	Special minijack, DC 5 V
Remote jack	Stereo mini-minijack (ø2.5 mm)
MIC jack	Minijack, -66 dBs, low impedance with 2.5-3 V DC output, impedance 6.8 kΩ

— Continued on next page —

8 VIDEO CAMERA RECORDER
SONY®



General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor) 9.0 V (alkaline batteries)
Average power consumption	6.0 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions	Approx. 109 × 109 × 197 mm (w/h/d) (4 3/8 × 4 3/8 × 7 7/8 inches)
Mass	Approx. 770 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette, and shoulder strap Approx. 1,000 g (2 lb 3 oz) including the battery pack NP-55, lithium battery CR2025, cassette P5-90, and shoulder strap
Microphone	Electret condenser microphone, manual type

AC power adaptor

Power requirements	110–240 V AC, 50/60 Hz
Power consumption	15 W
Output voltage	DC OUT: 7.5 V, 1.2 A in operating mode Battery charge terminal: 10 V, 1.1 A in charge mode
Application	Sony battery packs NP-55, NP-55H, NP-66H, NP-77, NP-77H, NP-77HD
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Dimensions	Approx. 103 × 49 × 63 mm (w/h/d) (4 1/8 × 1 15/16 × 2 1/2 inches) including projecting parts and controls
Mass	Approx. 290 g (10 oz)

Supplied accessories

(A)	(A)
1	1 Wireless Remote Commander (1) and Remote Commander holder (1)
2	2 Battery pack NP-55 (1)
3	3 AC power adaptor AC-V25 (1)
4	4 Lithium battery CR2025 (2) (for the camcorder/for the Remote Commander)
5	5 RFU adaptor RFU-90E (1) (AEP model) RFU-89EA with an aerial selector and a screw driver (1) (UK/E model)
6	6 Shoulder strap (1)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!



COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

Part code and part name of the semiconductor for correction of the print board is described in the space of each print figure. Use this list when ordering parts.

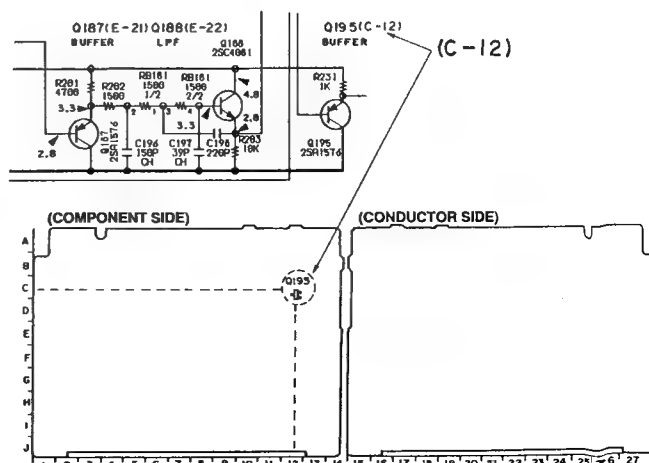
[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 34 and 47.)

This diagram is useful for repair.



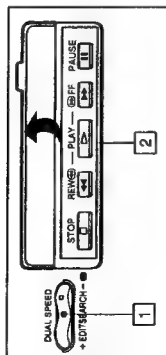
SECTION 1 GENERAL

This section is extracted from instruction manual.

Identifying the Parts

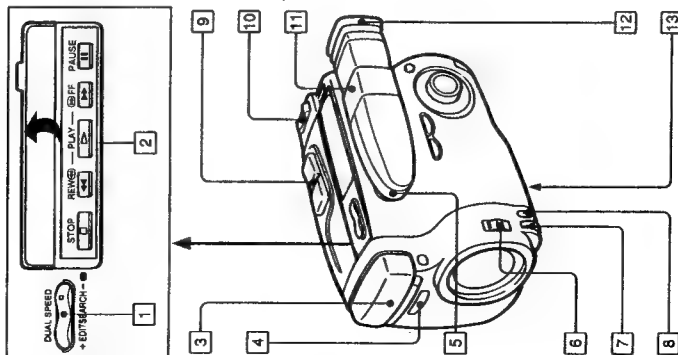
For details on the use of each part, refer to the pages indicated in the parentheses.

(B-1)

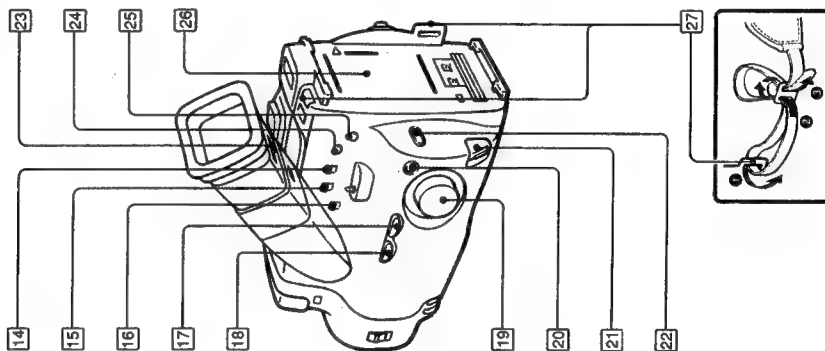


- 1 EDIT/SEARCH button (26)
- 2 Tape transport buttons (37), (38)
 - STOP (stop)
 - ◀ REW (rewind)
 - ▶ PLAY (playback)
 - ⏏ FF (fast forward)
 - ⏏ PAUSE (pause)
- 3 Built-in microphone (monaural)
- 4 Remote sensor (7)
- 5 Camera recording/battery lamp (24)
- 6 LENS COVER switch (23)
- 7 Focus dial (27)
- 8 FOCUS button (27)
- 9 Power zoom button (25), (27)
- 10 POWER switch
- 11 Viewfinder (22)
You can monitor the colour picture being recorded or played back.
- 12 Eyecup
- 13 Lithium battery compartment (9)

(B-1)



(B-2)



(B-2)

- 14 REC MODE (recording mode)/EDIT switch (23), (39)

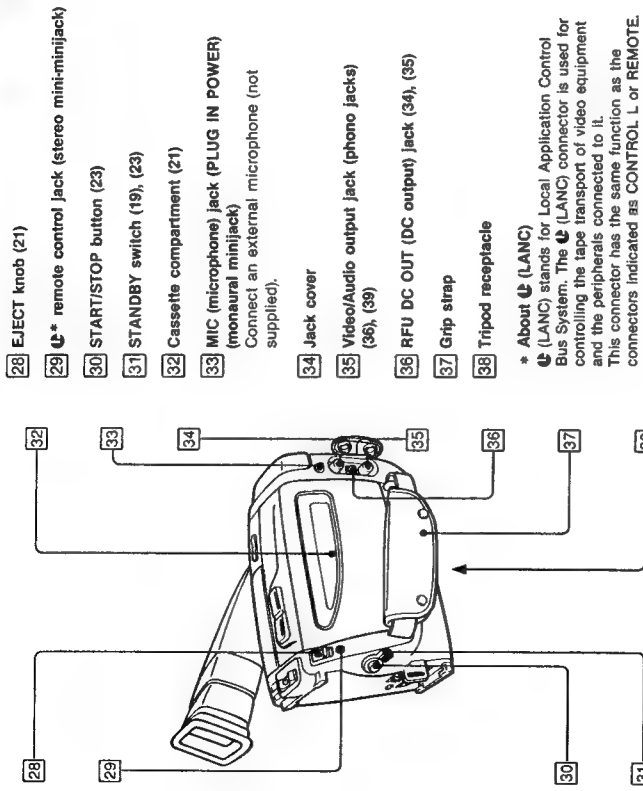
Mode	Recording	Playback	Editing
Setting	SP LP REC MODE	EDIT EDIT	EDIT EDIT
Function	Recording mode switch	EDIT switch	EDIT switch

- 15 REMOTE COMMANDER ON/OFF switch (7)

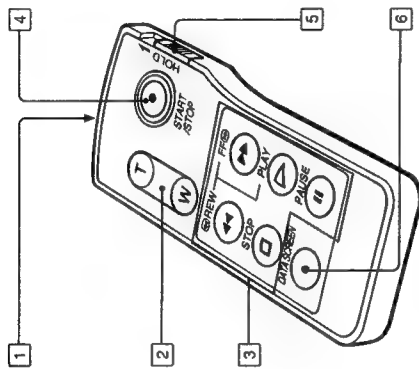
- 16 BEEP switch (22)
- 17 TIME (NEXT) button (19), (24), (31)
- 18 DATE (+) button (19), (24), (31)
- 19 PROGRAM AE dial (28)
- 20 FADER button (30)
- 21 BATT (battery eject) knob (12)
- 22 COUNTER RESET button (23)
- 23 Viewfinder lens control (22)
- 24 SUMMERTIME button (19), (31)
- 25 AREA button (31)
- 26 Battery mounting surface (12)
- 27 Hooks for shoulder strap

Identifying the Parts

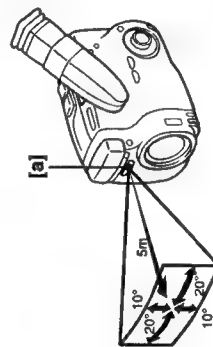
(B-3)



(B-5)



(B-6)



Caution (B-4)

Do not pick up the camcorder as shown in the illustration.

(B-4)



Identifying the Parts

Wireless Remote Commander

You can remotely record or play back a tape. The buttons on the Remote Commander with the same name or same mark as those on the camcorder have the same function.

When you use the Remote Commander

Be sure to insert the supplied lithium battery into it (page 10) and to set REMOTE COMMANDER **ON/OFF** on the camcorder to "ON".

(B-5)

- 1 Transmitter
- 2 Power zoom button (25), (27)
- 3 Tape transport buttons (37), (38)
- 4 START/STOP button
- 5 HOLD switch*
Slide in the direction of the arrow to prevent the buttons from being accidentally depressed.
- 6 DATA SCREEN button* (38)
Press to erase or display the on-screen display.

Note

The * indicates the function which is operable only with the Remote Commander.

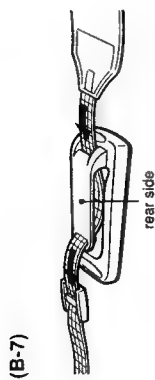
Remotely controllable area (B-6)

Point the Remote Commander towards the remote sensor [a].

Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works through the signals of commander mode "VTR 2". A commander mode is used to distinguish this camcorder from other Sony VTR to avoid misoperation. If you use another Sony VTR at commander mode "VTR 2", we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

Identifying the Parts



(B-8)

[a] When attaching the Remote Commander to the Remote Commander holder



[b]

[b] When detaching the Remote Commander from the Remote Commander holder

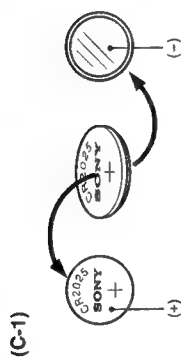


Using the Remote Commander holder
You can clip the Remote Commander holder on your coat pocket or belt, or also slide it onto the shoulder belt before attaching the Remote Commander to it. (B-7)

Preparing your camcorder 1

Inserting the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a positive (+) side and a negative (-; no mark) side as illustrated. Be sure to install the lithium battery with the correct polarity. (C-1)

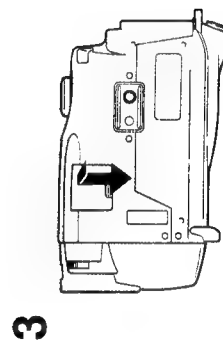
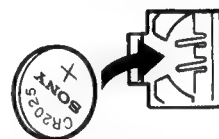
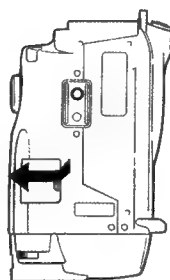


Inserting the Lithium Battery into the Camcorder

(C-2)

This camcorder uses a lithium battery to activate the clock. At first install the supplied lithium battery.

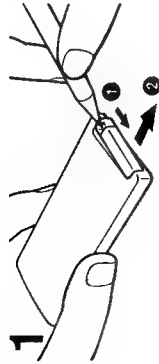
- 1 Detach the lid of the lithium battery compartment at the bottom.
- 2 Install the supplied CR2025 lithium battery with the positive (+) side facing out.
- 3 Replace the lid.



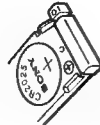
To change the lithium battery
Detach the lid of the lithium battery compartment, and replace the lithium battery with a new one.
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, resetting of the date and time will be necessary.

Inserting the Lithium Batteries

(C-3)



2



3

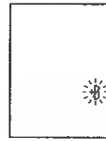


Inserting the Lithium Battery into the Remote Commander

(C-3)

- 1 Pull out the lithium battery holder from the Commander.
- 2 Install the lithium battery with the positive (+) side facing upward.
- 3 Put the lithium battery holder back into the Commander.

(C-4)



Lithium battery life (under normal operation)

The battery for the camcorder lasts for approximately 1 year. When the battery becomes weak, the indicator will flash inside the viewfinder for about 5 seconds (when the POWER switch is set to CAMERA). The battery for the Remote Commander lasts for approximately 6 months. When the battery becomes weak or dead, the Commander does not work. In either case, replace the battery with a Sony CR2025 battery. Use of any other type of battery may present the risk of fire or explosion.

CAUTIONS

- Keep the lithium battery out of the reach of children.
- Should the battery be swallowed, immediately consult a doctor.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated.
- Do not recharge, disassemble, or dispose of in fire.

Preparing your camcorder 2

Connecting the Power Sources

First, Choose the Power Source.

Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-55H, NP-66H, NP-77, NP-77H, NP-77HD
	Alkaline batteries	Battery case EBP-77
Indoors	House current	AC power adaptor AC-V25 (supplied), AC-V55, AC-S10
In the car	12V or 24V car battery	DC pack DCP-77, AC power adaptor AC-V55, the car battery cord DCC-16AE and the car battery charger DC-S10

For details, see the operation manual of the accessory you want to use.

Using the Battery Pack

Step 1 Charge the battery pack. (D-1)

- 1 Connect the power cord to wall. The POWER lamp (green) will light up.
- 2 Align the right side of the battery pack with the white line on the AC power adaptor.
- 3 Slide the battery pack in the direction of the arrow.
- 4 Set the selector to CHARGE

When the charging is completed, the CHARGE lamp goes out. Set the VTR (DC OUT)/CHARGE selector to STANDBY.

	NP-77H/77HD	NP-77	NP-66H	NP-55H	NP-55
Required charging time*	160	140	120	80	70
Battery life**	135	105	100	60	50

* Approximate minutes using AC-V25
** Approximate minutes using fully charged battery pack, continuous recording indoors

To remove the battery pack

Slide the battery pack in the direction opposite to the arrow.

Notes

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to STANDBY and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.

Preparing your camcorder 3

Setting the Date and Time

(F)

Make sure that a power source and lithium battery are installed.

1 While pressing the green button, set the POWER switch to CAMERA, and turn STANDBY up.

2 Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds until "1 LONDON" flashes inside the viewfinder. DATE (+) now functions as + (to advance numbers) and TIME (NEXT) functions as NEXT (to execute).

3 Press DATE (+) until your area name and number appear and then press TIME (NEXT).

Countries	Area name	Area number
The United Kingdom and Portugal (GMT)	LONDON	1
Other European countries (CET)	PARIS	2
Finland, Greece, etc.	CAIRO	3

4 Choose one of the following options to set the clock:

[a] To set to summer time, press

SUMMERTIME. Then press TIME (NEXT). The * indicator appears inside the viewfinder.

[b] To set to standard time, press TIME (NEXT).

5 Set the year*, month, day, hour and minute, in this order.

First adjust the flashing digits with DATE (+) and then press TIME (NEXT).

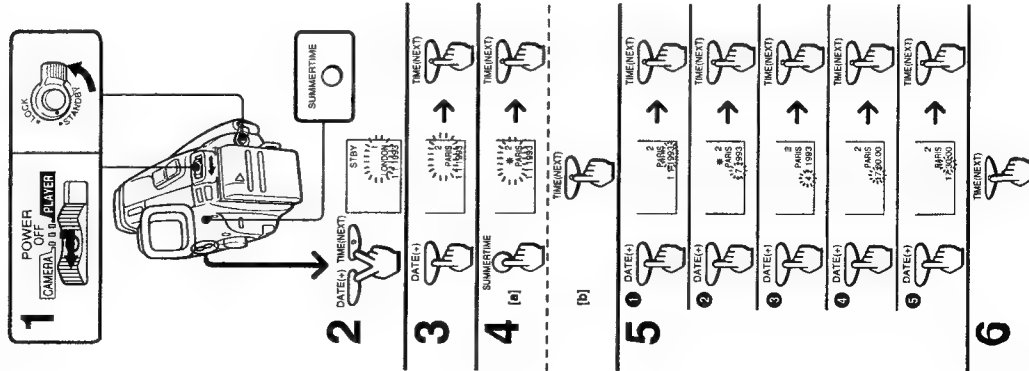
* To set the year to 1993, no need to press DATE (+) in step 5 - 6.

6 Press TIME (NEXT).

The clock starts operating.

To correct the date and time setting Press TIME (NEXT) repeatedly until the digits of minute stop flashing. Then repeat step 2 to 6.

(F)



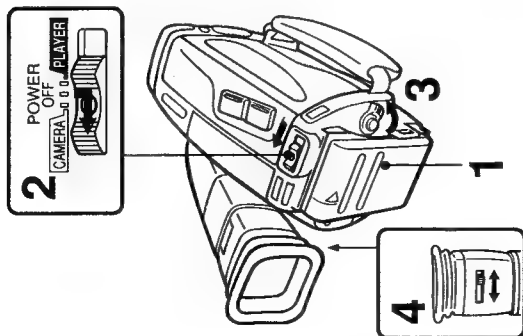
Preparing your camcorder 5

Adjusting the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust it when you use the camcorder for the first time, or when you use it after someone else did.

(H)

- 1 Make sure that the power source is connected and that the cassette is inserted.
- 2 While pressing the green button, set the POWER switch to CAMERA.
- 3 Turn STANDBY up.
- 4 Slide the viewfinder lens control so that "STBY" displayed in the viewfinder screen comes into sharp focus.

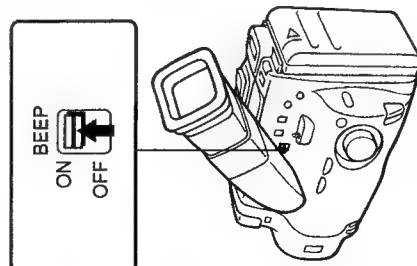


(H)

Checking the BEEP Switch

(I)

A beep sounds when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, set the BEEP switch to OFF.



(I)

Notes and Precautions

Notes on Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with a moisture sensor. However, take the following precautions:

If moisture condenses inside the camcorder

(S-1)

When the and indicators inside the viewfinder flash, moisture condenses inside the camcorder. In this case, no function except for cassette ejection will work.

Eject the tape, turn off the camcorder, and leave it with the cassette holder open for about one hour.

The camcorder can be used again if indicator does not appear when the power is turned on again.

If moisture condenses on the surface of the tape

(S-2)

If moisture is present on the surface of the tape when the tape is inserted and a tape transport button (, , etc.) is pressed, the indicator flashes inside the viewfinder.

In this case, no function except for tape ejection will work.

Eject the tape and let it sit for about one hour.

The tape can be used again if the indicator does not appear when the tape is inserted and a tape transport button is pressed.

If moisture condenses on the lens

No indicator will appear, but the picture becomes dim.

Turn off the power and leave the camcorder unused for about one hour.

How to prevent moisture condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

- 1 Be sure to tightly seal the plastic bag containing the camcorder.
- 2 Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

Notes and Precautions

(S-3)



Notes on Video Head Cleaning

To ensure clear picture, clean the video heads periodically.
When playback pictures are noisy or hardly visible, the video heads may be dirty.

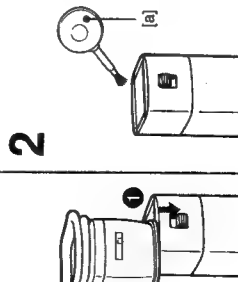
(a) Slight contamination
(b) Critical contamination

In such cases,
1 Clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied), referring to its instructions.
2 After cleaning, check if the picture is clear by recording or playing back with an ordinary tape.
3 If the picture is still noisy, repeat cleaning. (Do not repeat cleaning more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

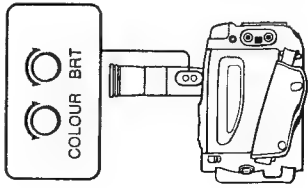
(S-4)



Removing Dust from inside the Viewfinder

(S-4)
1 While pressing down the hook (a), slide the viewfinder barrel in the direction of the arrow (b) and remove it from the viewfinder.
2 Remove dust using the blower.
(a) Blower brush

(S-5)



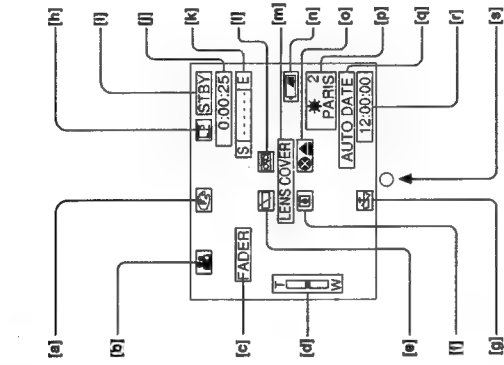
Adjustment of Picture Quality

(S-5)
You do not need to adjust the colour and brightness of the picture displayed on the viewfinder screen in everyday operation. If you want to change it, turn the screws on the viewfinder slowly using the philips screwdriver (not supplied).

	Turn clockwise	Turn counterclockwise
COLOUR	More colour intensity	Less colour intensity
BRT (brightness)	More brightness	Less brightness

Indicators inside the Viewfinder

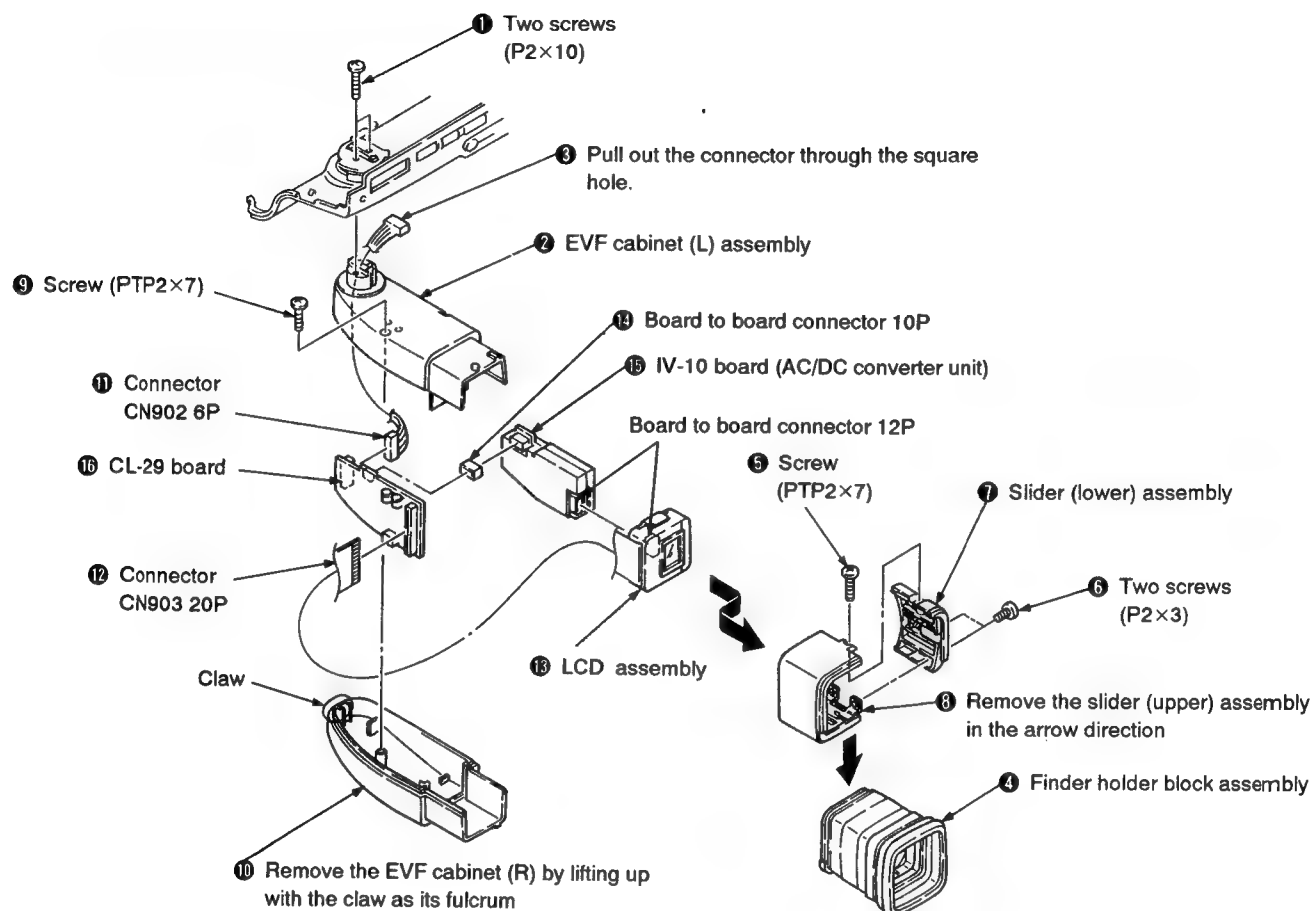
(T)



- (T) Manual focusing
- (a) Setting of PROGRAM AE mode
- (b) FADER is pressed.
- (c) Power zoom indicator
- (d) "Replace battery."
- (f) "Moisture has condensed."
- (g) "Replace lithium battery."
- (h) Recording/Playback mode (LP/SP)
- (i) Tape transport and camera recording mode
- (j) Tape counter
- (k) Remaining tape length indicator
- (l) "Exchange tape or no cassette inside."
- (m) The lens cover is closed.
- (n) Remaining battery indicator
- (o) "Clean video heads (X)" or "trouble has occurred (Δ)".
- (p) World clock indicator
- (q) Auto date indicator
- (r) Date or time
- (s) Lights up during recording. When flashing: "Replace battery."

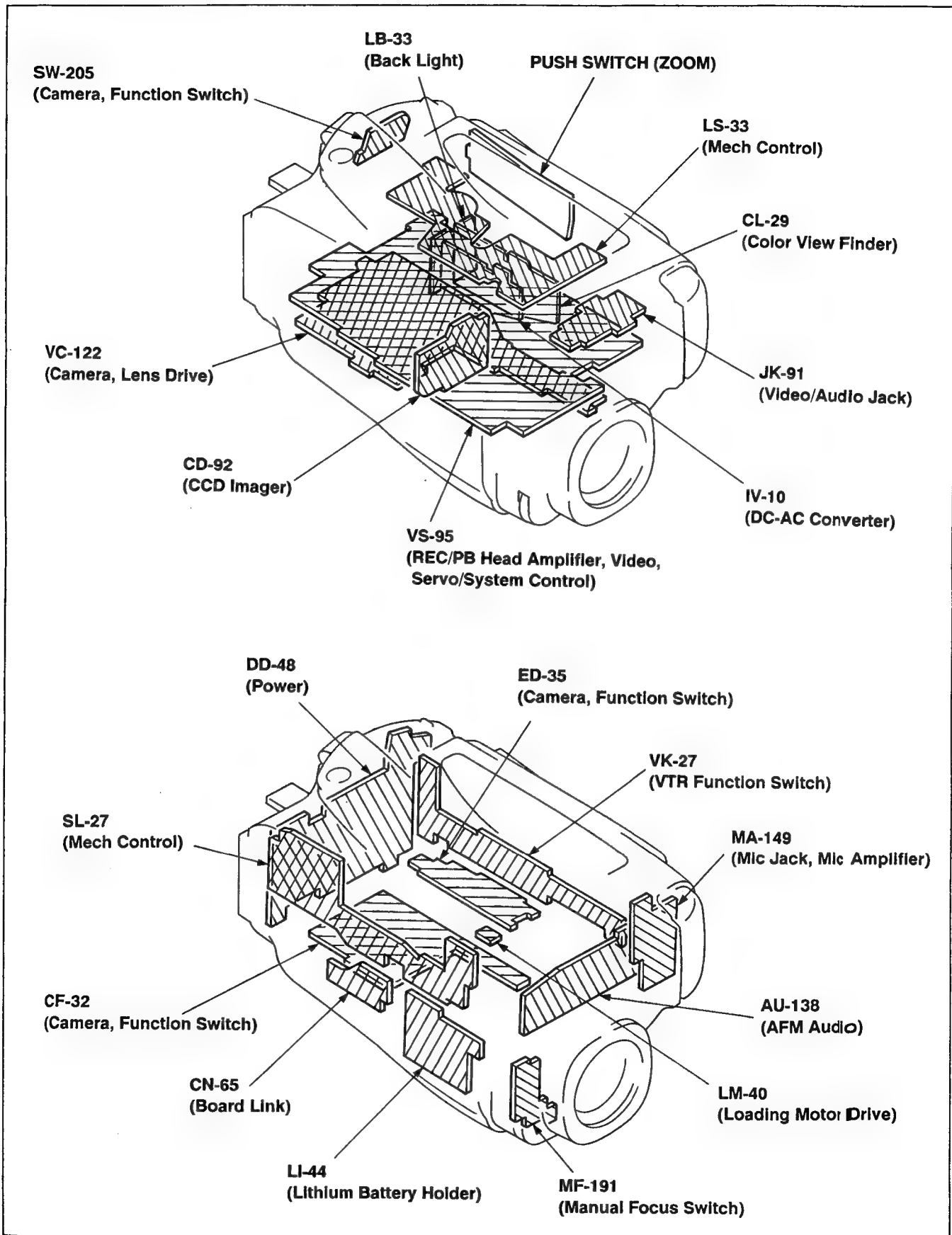
SECTION 2 DISASSEMBLY

2-13. REMOVAL OF EVF ASSEMBLY (CL-29 BOARD)



SECTION 3 DIAGRAMS

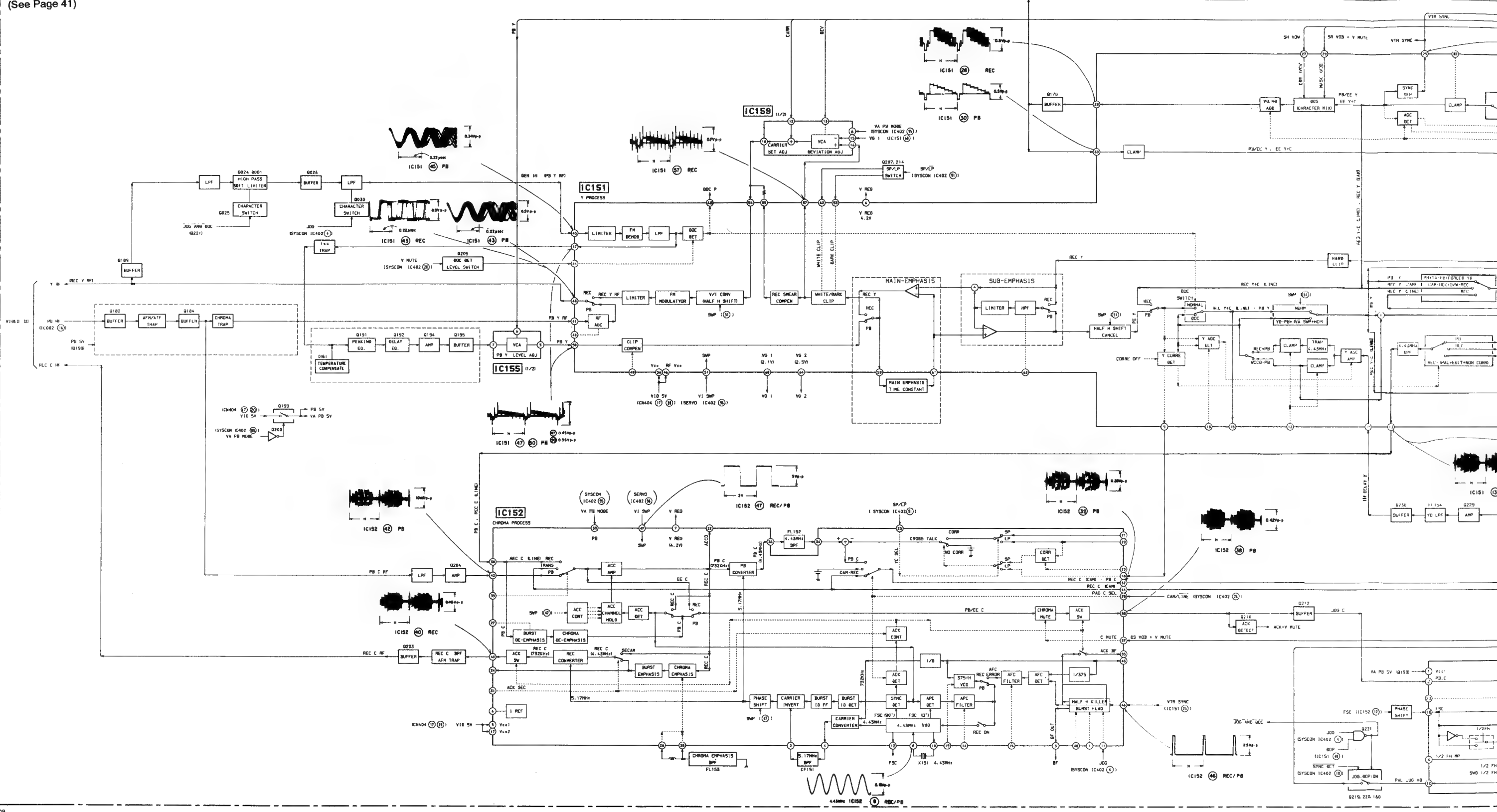
3-1. CIRCUIT BOARDS LOCATION

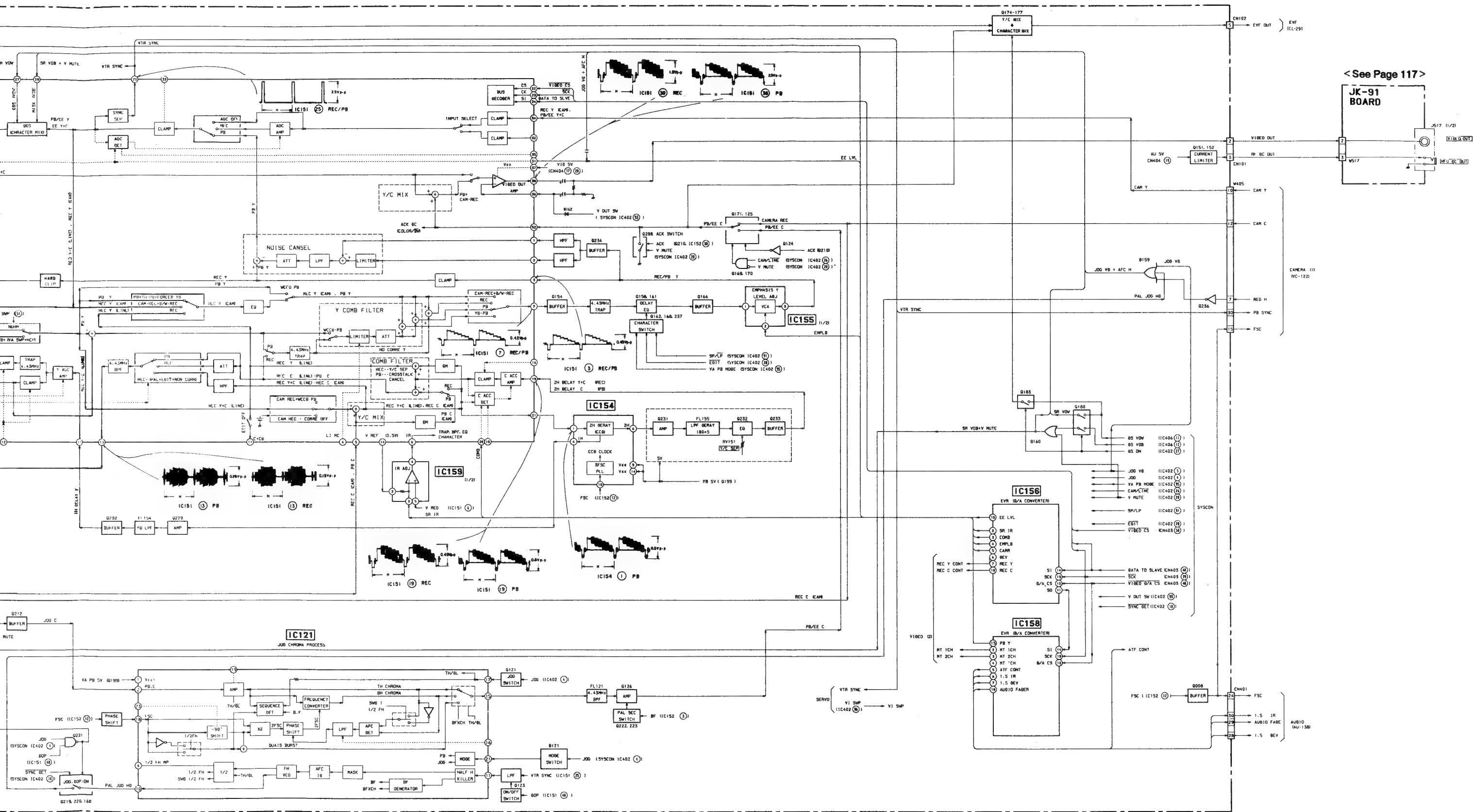


3-6. VIDEO (1) BLOCK DIAGRAM

< > : The pages above correspond to CCD-TR303E/TR303EP SERVICE MANUAL, () : Pages of CCD-TR333E.

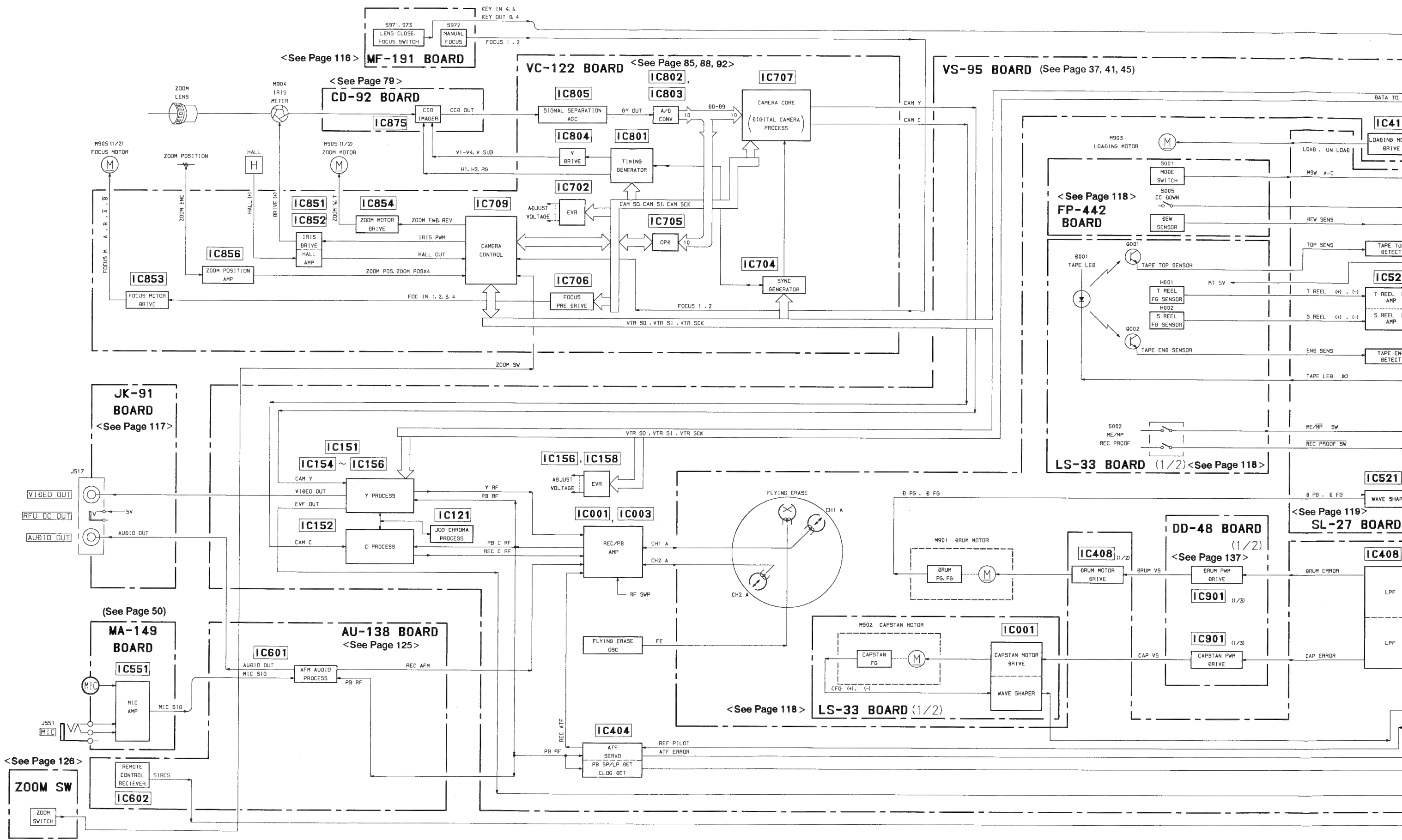
VS-95 BOARD
(See Page 41)

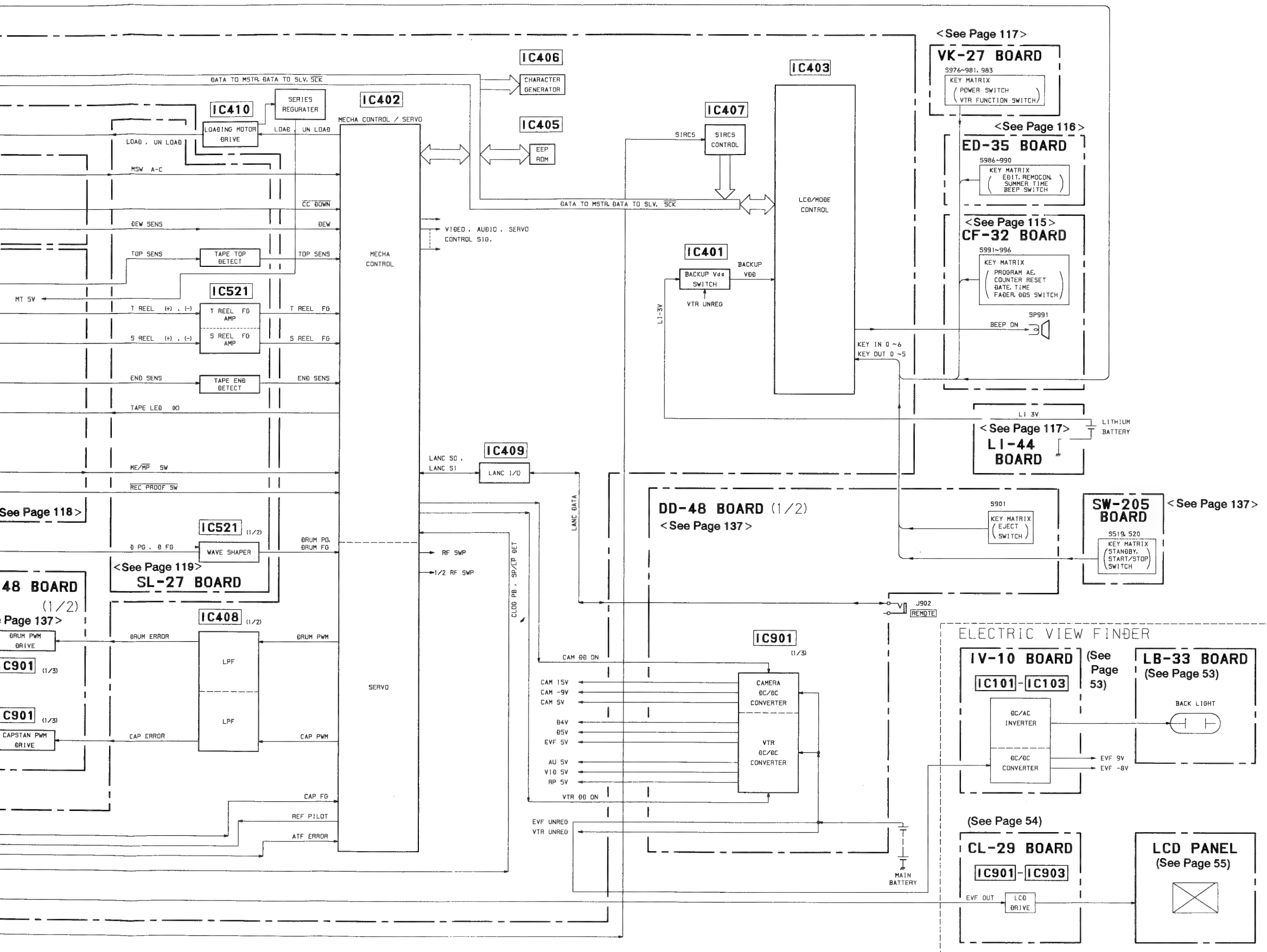


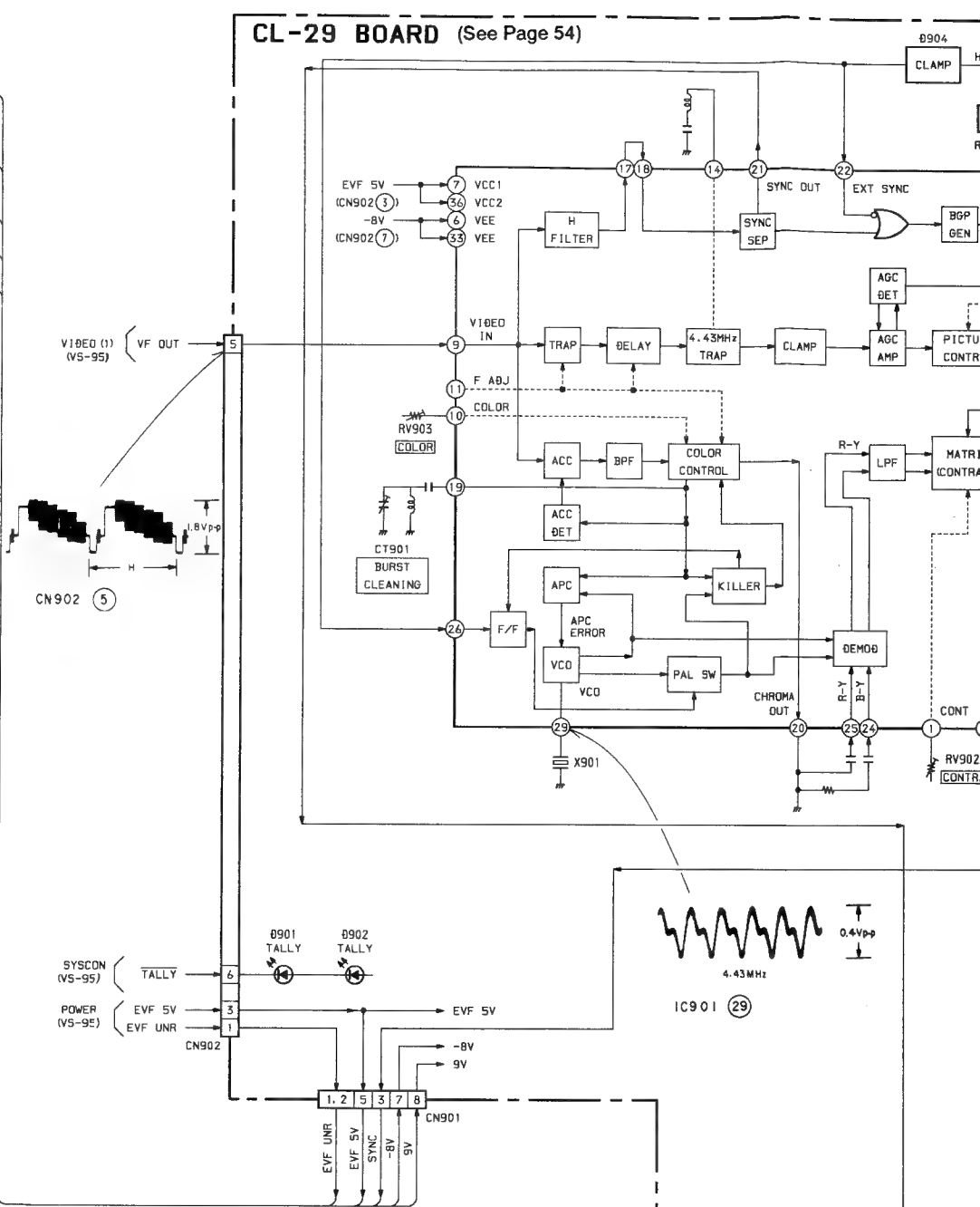
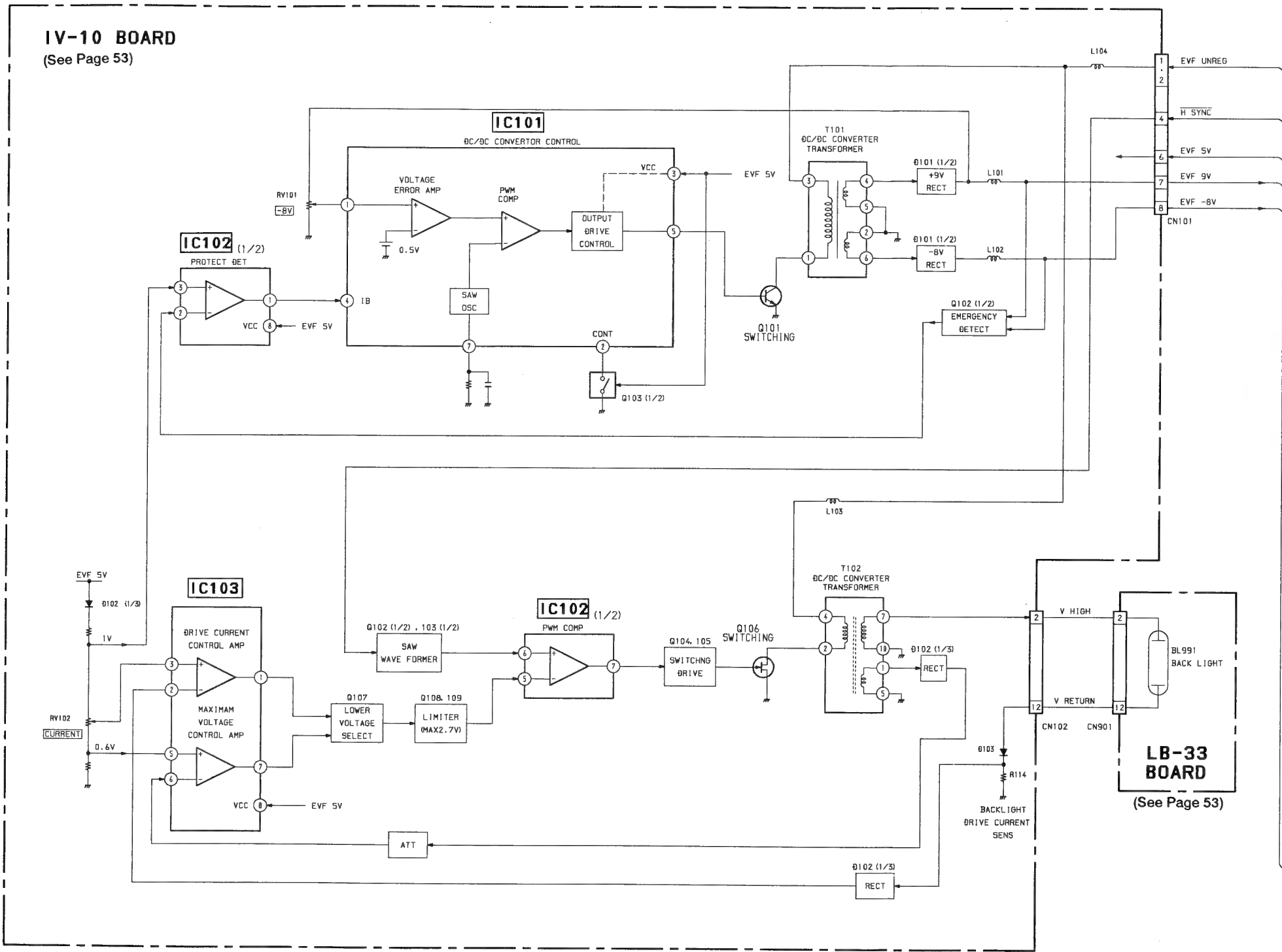


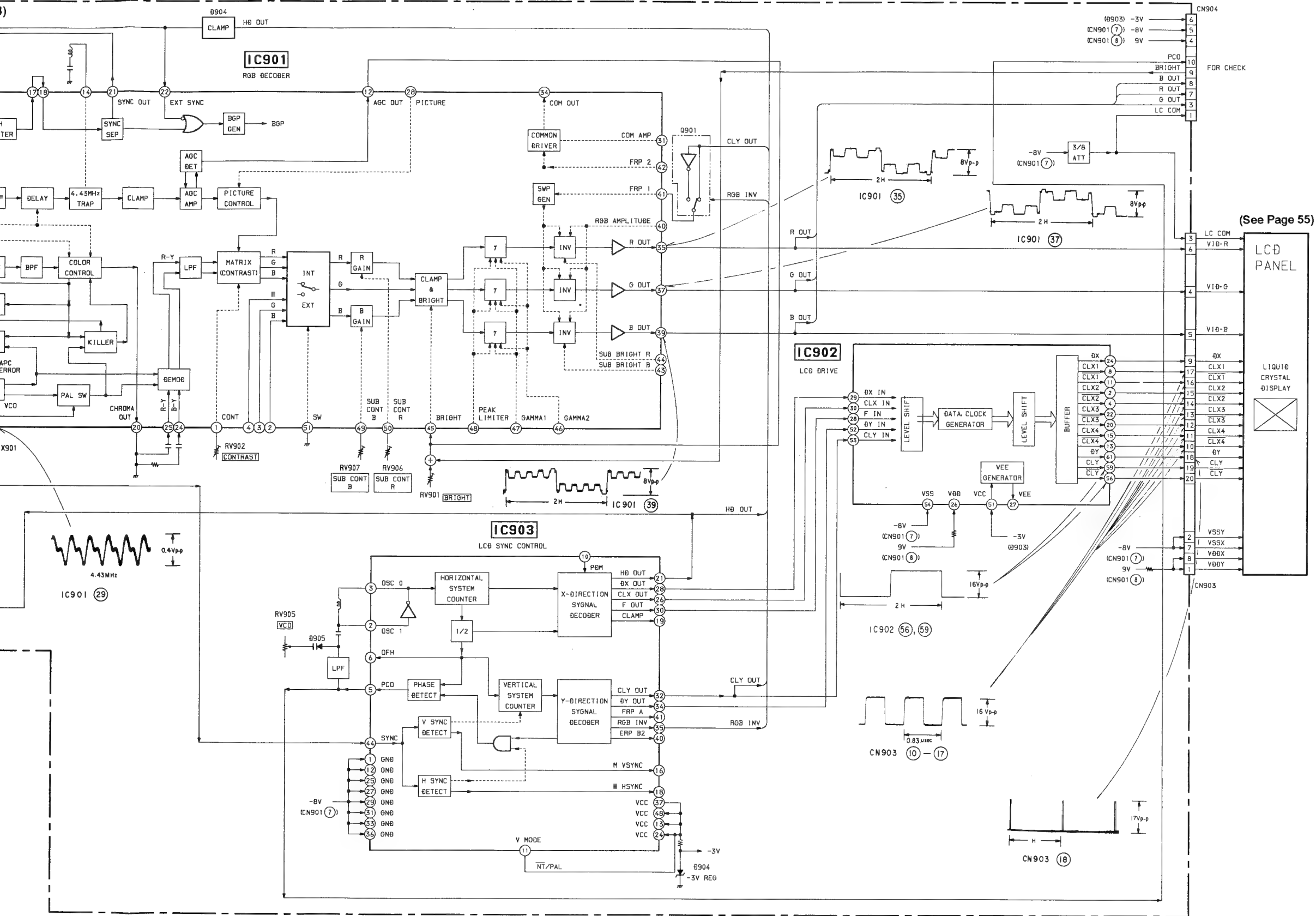
3-2. OVERALL BLOCK DIAGRAM

< > : The pages above correspond to CCD-TR303E/TR303EP SERVICE MANUAL, () : Pages of CCD-TR333E.



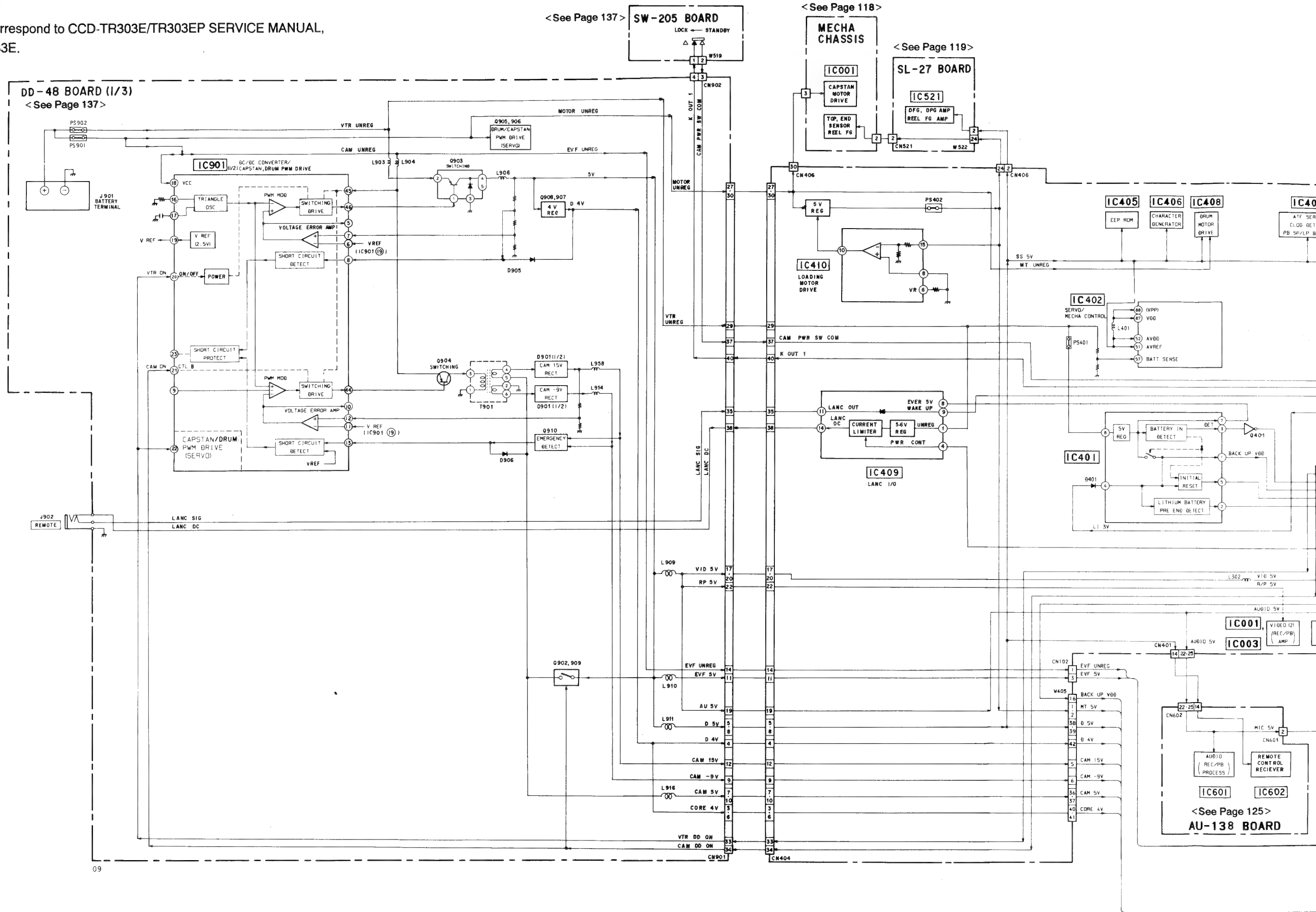






3-15. POWER BLOCK DIAGRAM

< > : The pages above correspond to CCD-TR303E/TR303EP SERVICE MANUAL,
() : Pages of CCD-TR333E.



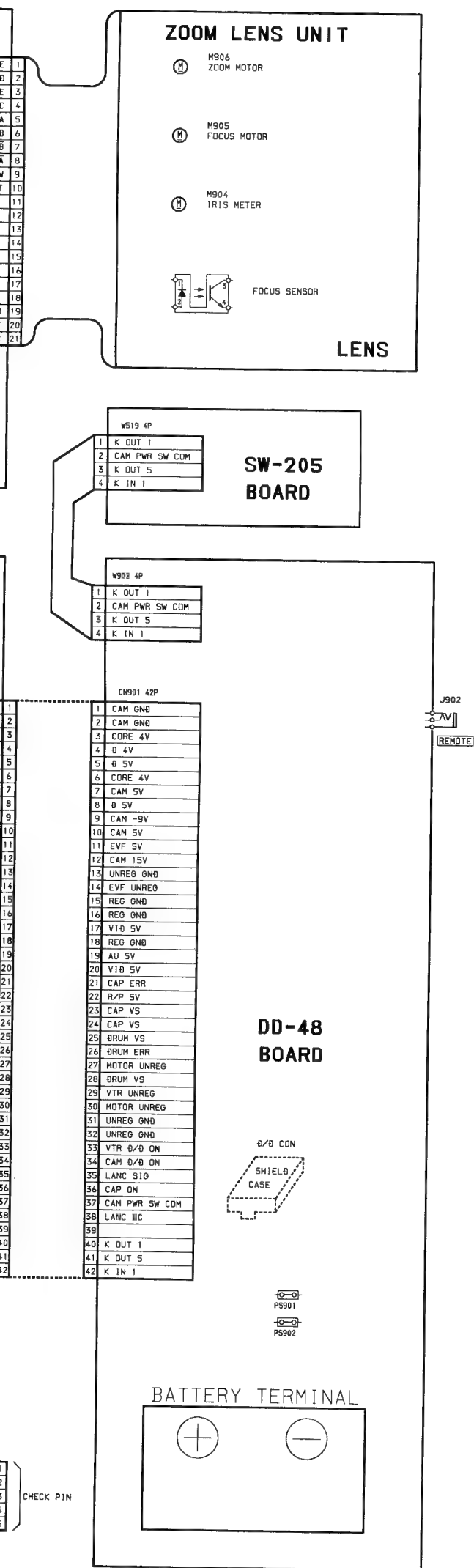


1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

A
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J
K
L
M
N
O



18 19 20



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

• For printed wiring boards.

- — : indicated a lead wire mounted on the component side.
- : indicated a lead wire mounted on the conductor side.
- : Parts mounted on the conductor side.
- : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- : Through hole.

Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)
Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Component side)

• For schematic diagrams.

- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
Chip resistor are 1/10W unless otherwise noted.
kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.*
- : B+ Line.*
- - - : B- Line.*
- ⇒ : IN/OUT direction of (+, -) B LINE.*
- Circled numbers refer to waveforms.*

* : indicated by the color red.

Note:

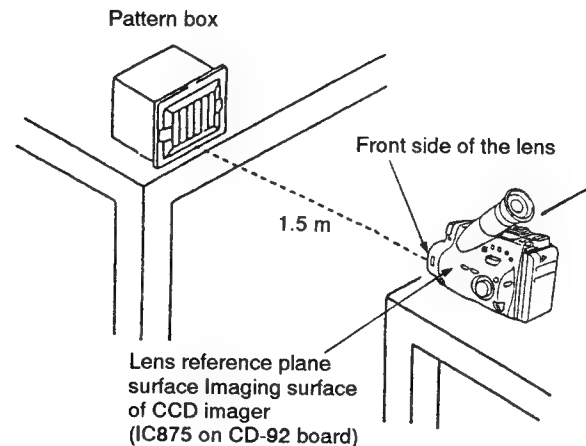
The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

• Measuring conditions voltage value and waveform. (CAMERA, DIGITAL TITLE block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.
Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

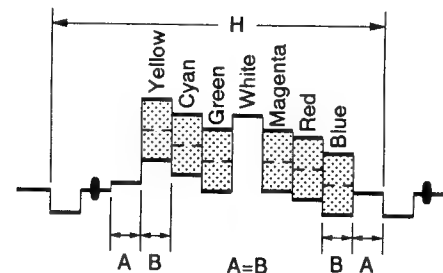


Fig. a (Video output terminal output waveform)

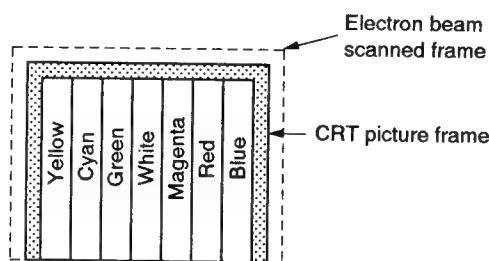


Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, VIEW FINDER block)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

VS-95 (REC/PB HEAD AMP, VIDEO, SERVO/SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No. VS-95 BOARD: 4000 series —

• For printed wiring boards.

- VS-95 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- : Through hole is omitted.

Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)

Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Component side)

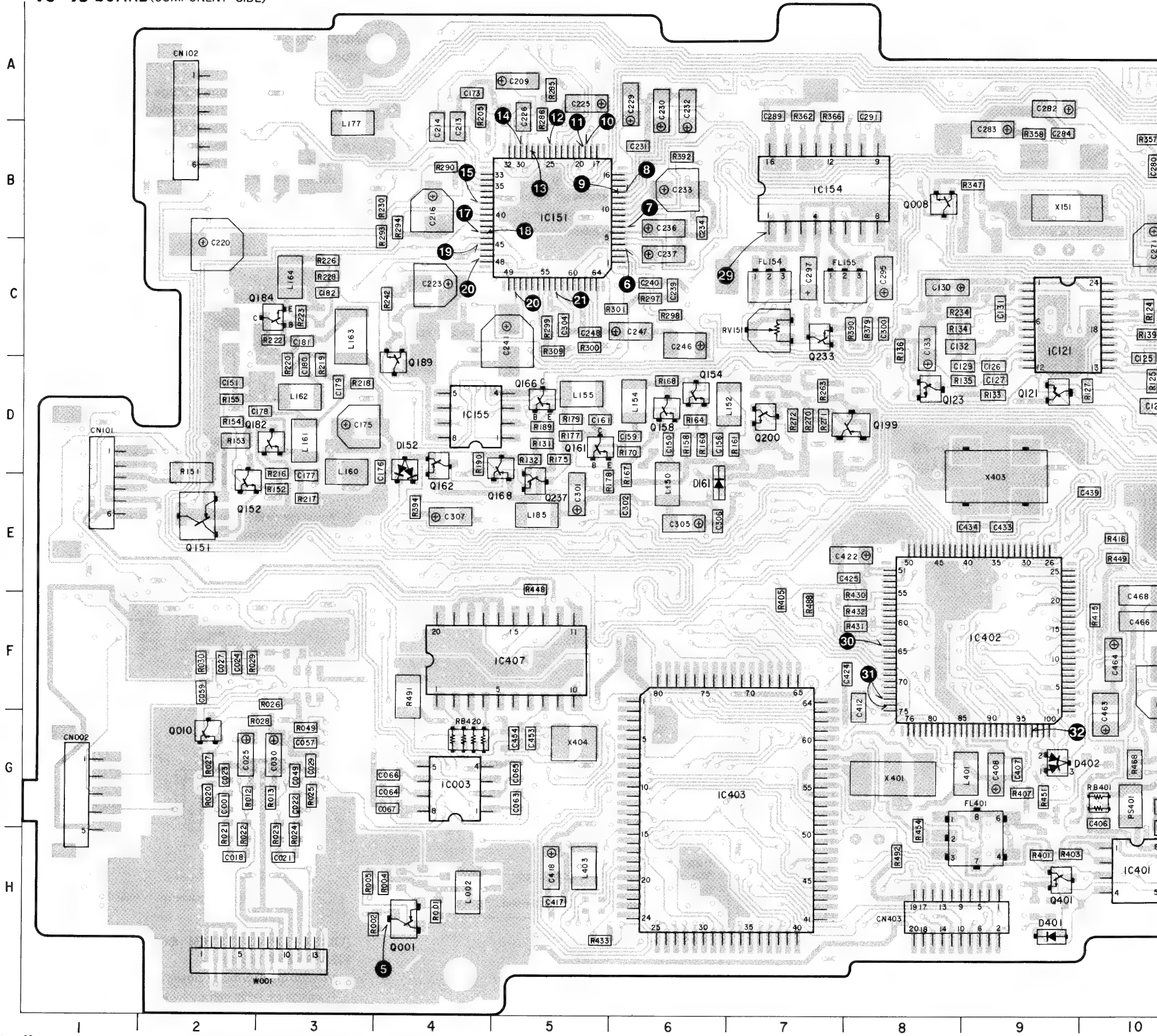
< DIODE >

D001	8-719-800-76	DIODE 1SS226
D121	8-719-027-50	DIODE MA142WK
D152	8-719-027-48	DIODE MA142WA
D159	8-719-027-50	DIODE MA142WK
D160	8-719-027-50	DIODE MA142WK
D161	8-719-404-46	DIODE MA110
D162	8-719-027-50	DIODE MA142WK
D163	8-719-027-50	DIODE MA142WK
D401	8-719-421-27	DIODE MA728
D402	8-719-027-50	DIODE MA142WK
D403	8-719-404-46	DIODE MA110

< IC >

IC001	8-752-033-38	IC CXA1202R	△Q001
IC003	8-752-053-21	IC CXA1211M	Q003
IC121	8-759-605-61	IC CXA1203N	Q008
IC151	8-752-065-54	IC CXA1207AR	Q010
IC152	8-752-065-56	IC CXA1208R	△Q019
IC154	8-752-333-24	IC CXL1506M	△Q020
IC155	8-752-053-21	IC CXA1211M	Q021
IC156	8-759-055-82	IC M62353GP	Q022
IC158	8-759-055-82	IC M62353GP	Q024
IC159	8-759-636-33	IC CXA1452N	Q025
IC401	8-759-056-84	IC S-8420AF	Q026
IC402	8-752-838-20	IC CXP80624-428R	Q121
IC403	8-759-096-79	IC uPD75316GF-318-3B9	Q123
IC404	8-759-059-42	IC CXA1481AR	Q124
IC405	8-759-044-78	IC AK6420F	Q125
IC406	8-759-081-96	IC uPD6456GS-620	Q126
IC407	8-759-145-63	IC uPD7564G-540	Q151
IC408	8-759-057-60	IC MCD004BM	Q152
IC409	8-759-999-02	IC TL1596CDSB	Q154
IC410	8-759-062-02	IC MPC1720VM	Q158

VS-95 BOARD (COMPONENT SIDE)



< TRANSISTOR >

Q001	8-729-216-22	TRANSISTOR	2SA1162-G
Q003	8-729-402-55	TRANSISTOR	2SB1218A-R
Q008	8-729-402-32	TRANSISTOR	2SD1819A-R
Q010	8-729-403-35	TRANSISTOR	UN5113
Q019	8-729-120-28	TRANSISTOR	2SC1623-L5L6

Q020	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q021	8-729-905-23	TRANSISTOR	2SA1576-R
Q022	8-729-402-55	TRANSISTOR	2SB1218A-R
Q024	8-729-102-07	TRANSISTOR	2SC2223-F13
Q025	8-729-014-16	TRANSISTOR	RN2302-TE85L

Q026	8-729-402-32	TRANSISTOR	2SD1819A-R
Q121	8-729-403-35	TRANSISTOR	UN5113
Q123	8-729-402-42	TRANSISTOR	UN5213
Q124	8-729-403-35	TRANSISTOR	UN5113
Q125	8-729-117-73	TRANSISTOR	2SC4178-F14

Q126	8-729-402-32	TRANSISTOR	2SD1819A-R
Q151	8-729-101-07	TRANSISTOR	2SB798-DL
Q152	8-729-402-32	TRANSISTOR	2SD1819A-R
Q154	8-729-402-32	TRANSISTOR	2SD1819A-R
Q158	8-729-402-32	TRANSISTOR	2SD1819A-R

Q160	8-729-403-35	TRANSISTOR	UN5113
Q161	8-729-402-32	TRANSISTOR	2SD1819A-R
Q162	8-729-403-35	TRANSISTOR	UN5113
Q166	8-729-402-55	TRANSISTOR	2SB1218A-R
Q168	8-729-403-35	TRANSISTOR	UN5113

Q170	8-729-420-20	TRANSISTOR	XN4312
Q171	8-729-117-73	TRANSISTOR	2SC4178-F14
Q174	8-729-402-32	TRANSISTOR	2SD1819A-R
Q175	8-729-402-32	TRANSISTOR	2SD1819A-R
Q176	8-729-402-32	TRANSISTOR	2SD1819A-R

Q177	8-729-402-55	TRANSISTOR	2SB1218A-R
Q178	8-729-402-55	TRANSISTOR	2SB1218A-R
Q180	8-729-422-54	TRANSISTOR	XN4215
Q182	8-729-402-32	TRANSISTOR	2SD1819A-R
Q183	8-729-420-53	TRANSISTOR	UN5115

Q184	8-729-402-32	TRANSISTOR	2SD1819A-R
Q189	8-729-402-32	TRANSISTOR	2SD1819A-R
Q191	8-729-402-32	TRANSISTOR	2SD1819A-R
Q192	8-729-402-32	TRANSISTOR	2SD1819A-R
Q194	8-729-402-32	TRANSISTOR	2SD1819A-R

Q195	8-729-402-55	TRANSISTOR	2SB1218A-R
Q196	8-729-403-35	TRANSISTOR	UN5113
Q199	8-729-807-87	TRANSISTOR	2SB1295-UL6
Q200	8-729-013-88	TRANSISTOR	RN1302-TE85L
Q203	8-729-402-55	TRANSISTOR	2SB1218A-R

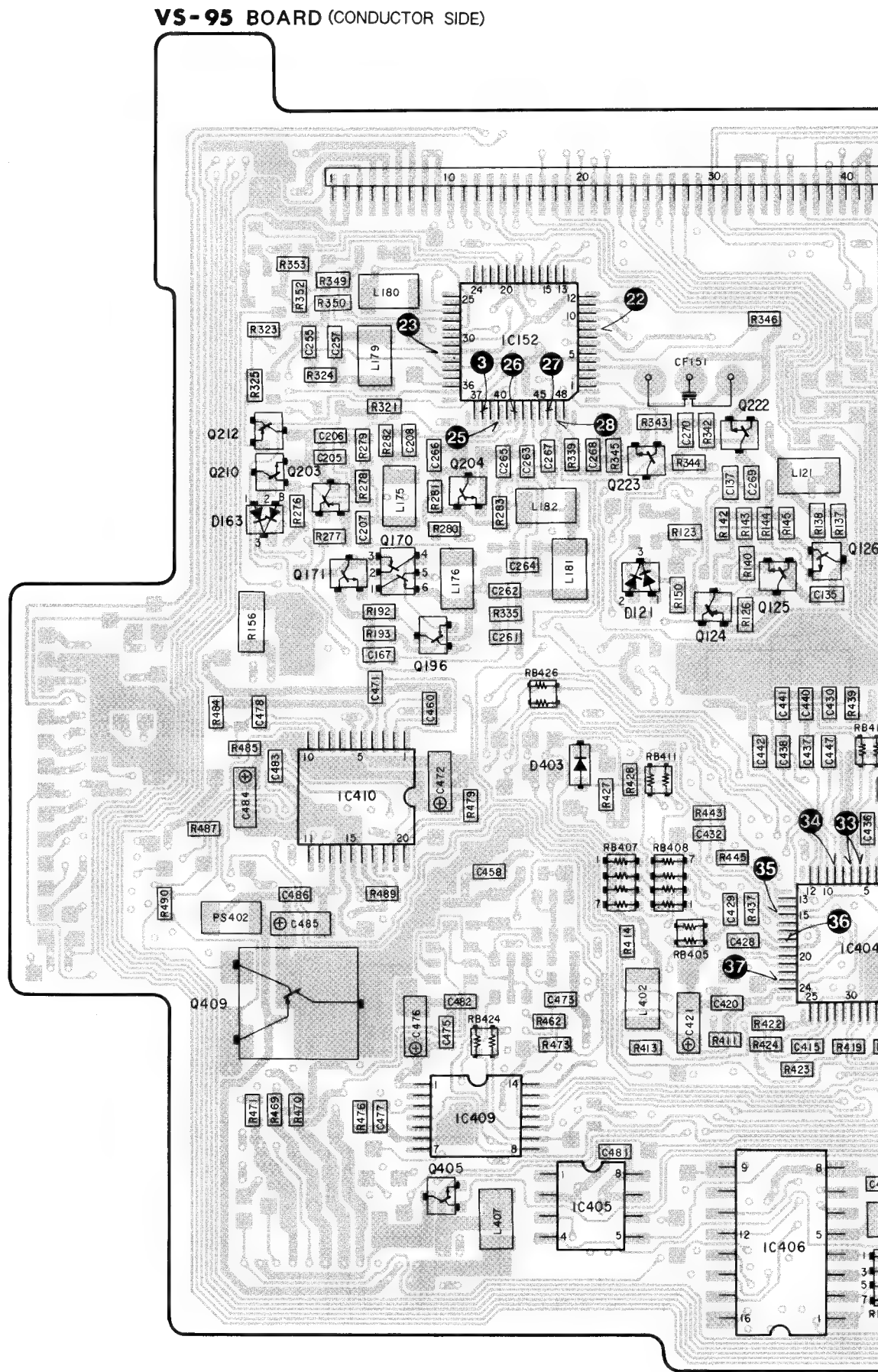
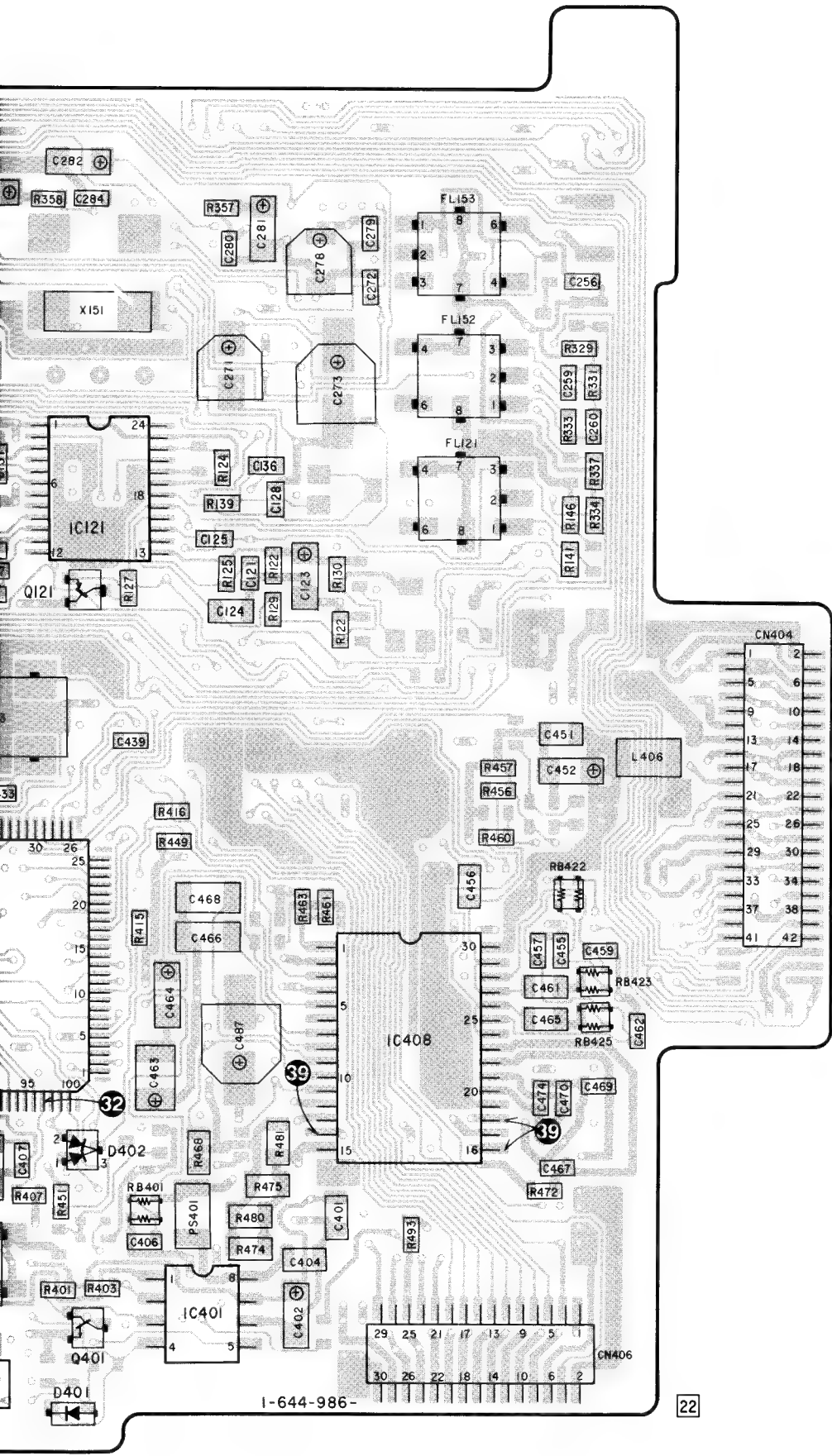
Q204	8-729-402-32	TRANSISTOR	2SD1819A-R
Q205	8-729-402-42	TRANSISTOR	UN5213
Q207	8-729-403-35	TRANSISTOR	UN5113
Q208	8-729-013-88	TRANSISTOR	RN1302-TE85L
Q210	8-729-402-42	TRANSISTOR	UN5213

Q212	8-729-402-55	TRANSISTOR	2SB1218A-R
Q214	8-729-420-12	TRANSISTOR	XN4213
Q219	8-729-810-13	TRANSISTOR	2SA1677
Q220	8-729-402-45	TRANSISTOR	UN5212
Q221	8-729-420-12	TRANSISTOR	XN4213

Q222	8-729-402-32	TRANSISTOR	2SD1819A-R
Q223	8-729-402-42	TRANSISTOR	UN5213
Q229	8-729-402-55	TRANSISTOR	2SB1218A-R
Q230	8-729-402-32	TRANSISTOR	2SD1819A-R
Q231	8-729-402-55	TRANSISTOR	2SB1218A-R

Q232	8-729-402-32	TRANSIST
Q233	8-729-402-32	TRANSIST
Q234	8-729-402-55	TRANSIST
Q236	8-729-420-56	TRANSIST
Q237	8-729-425-50	TRANSIST

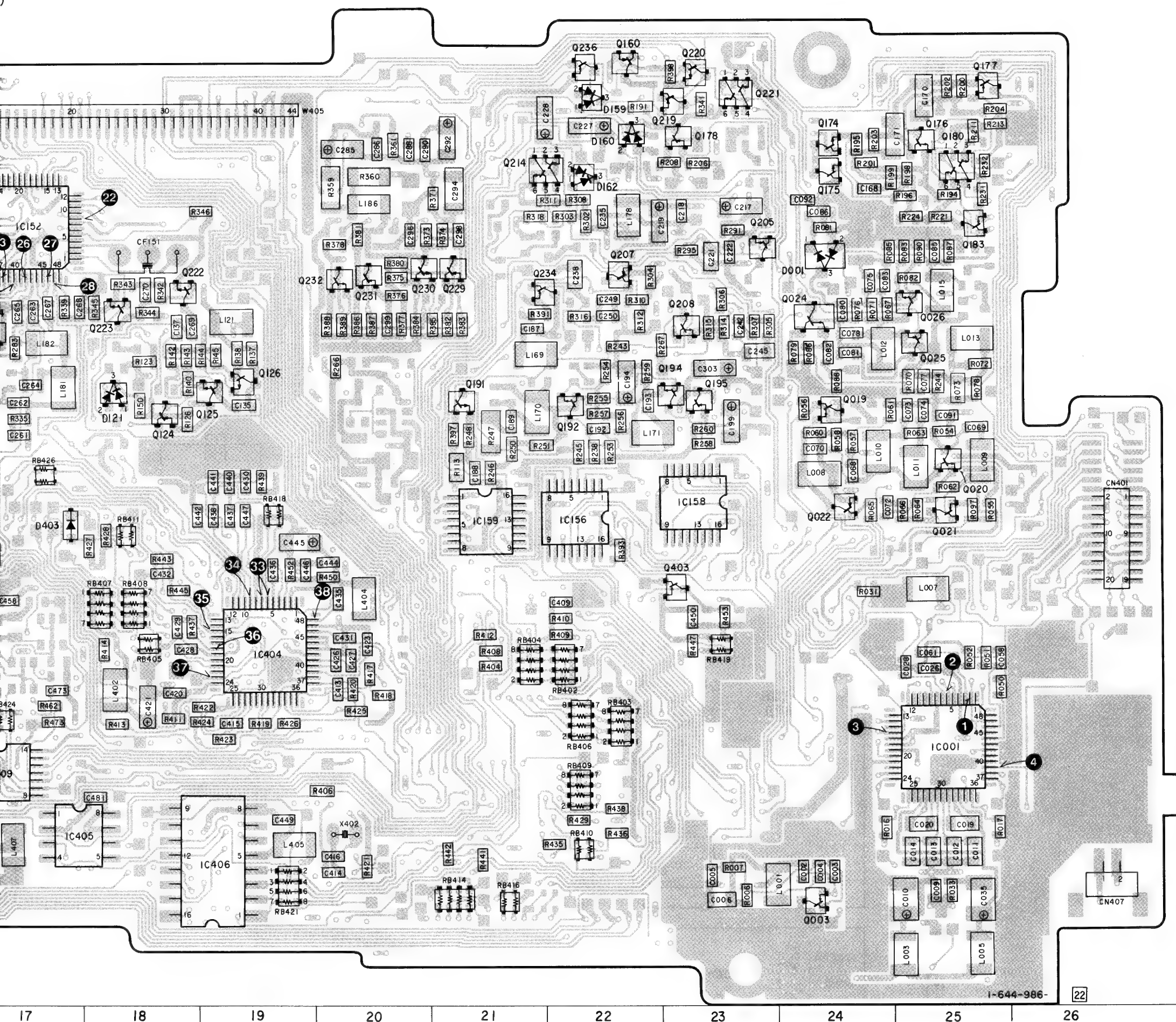
Q401 8-729-402-48 TRANSIST
Q403 8-729-403-35 TRANSIST
Q405 8-729-013-88 TRANSIST
Q409 8-729-017-67 TRANSIST



Q232	8-729-402-32	TRANSISTOR	2SD1819A-R
Q233	8-729-402-32	TRANSISTOR	2SD1819A-R
Q234	8-729-402-55	TRANSISTOR	2SB1218A-R
Q236	8-729-420-56	TRANSISTOR	UN511E
Q237	8-729-425-50	TRANSISTOR	2SB1218A-R

Q401	8-729-402-48	TRANSISTOR	UN521E
Q403	8-729-403-35	TRANSISTOR	UN5113
Q405	8-729-013-88	TRANSISTOR	RN1302-TE85L
Q409	8-729-017-67	TRANSISTOR	2SB1574

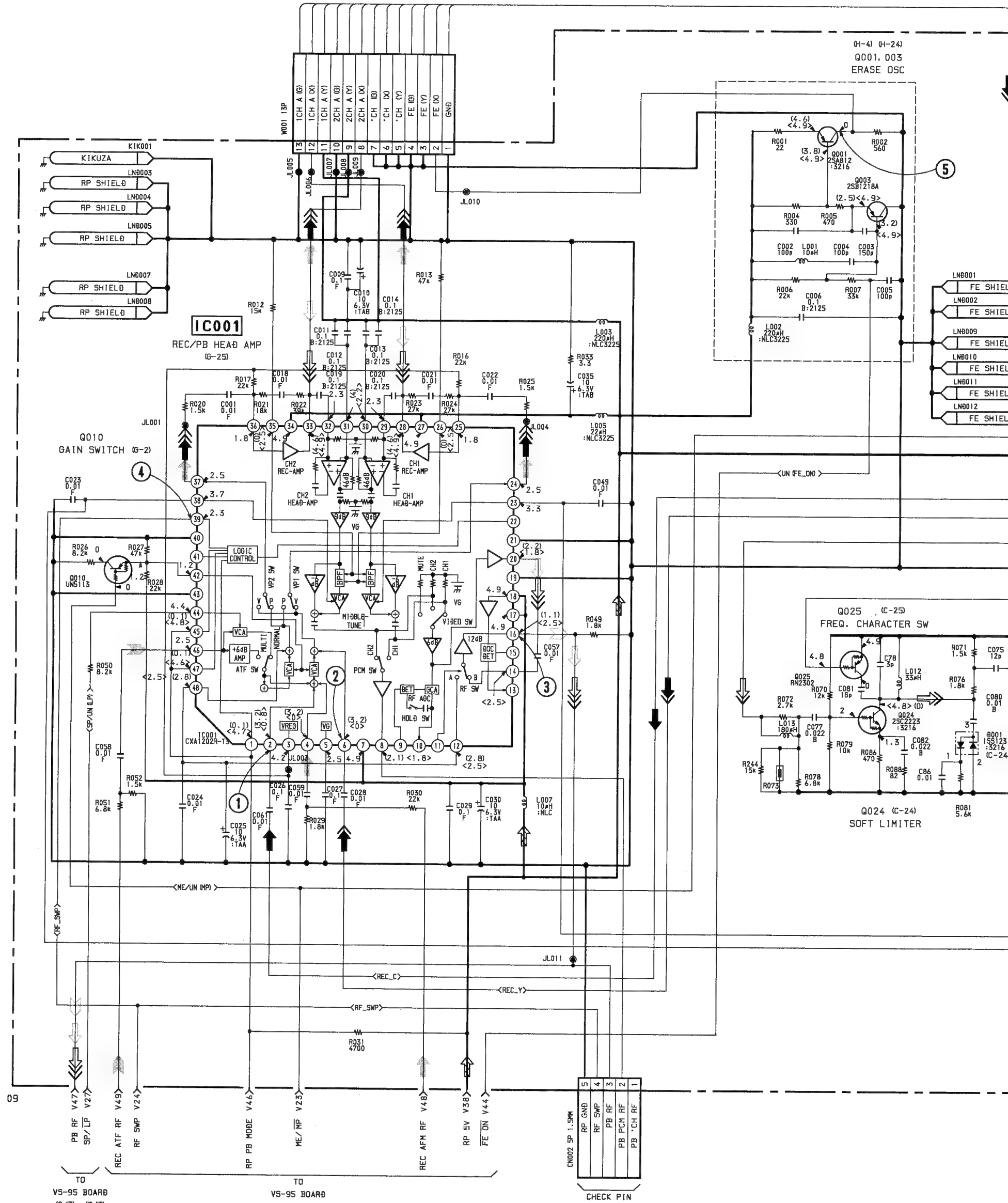
CD1819A-R
J5213
GB1218A-R
CD1819A-R
GB1218A-R

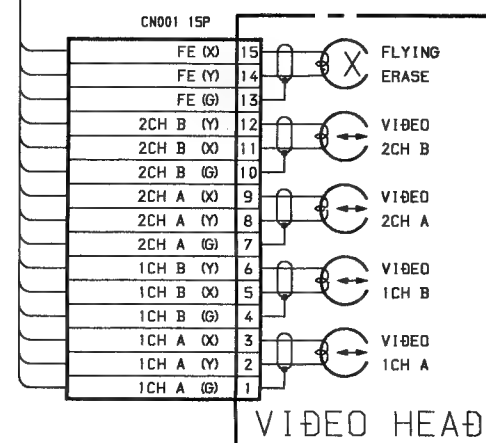
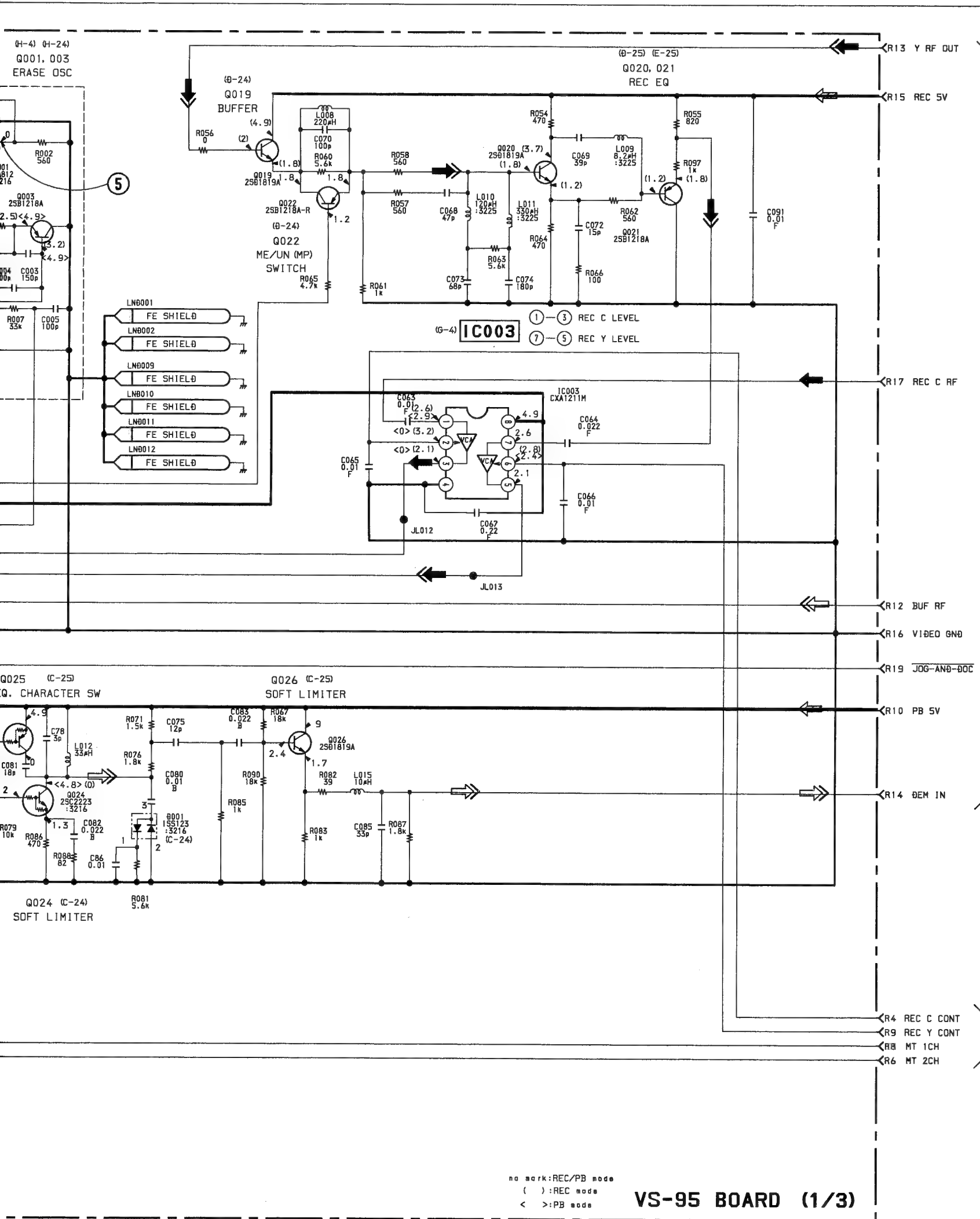


VS-95 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

• Refer to page 33 for Printed Wiring Board.

— Ref. No. VS-95 BOARD: 4000 series —



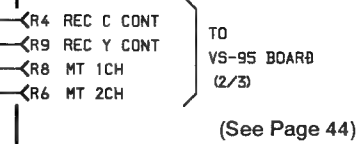
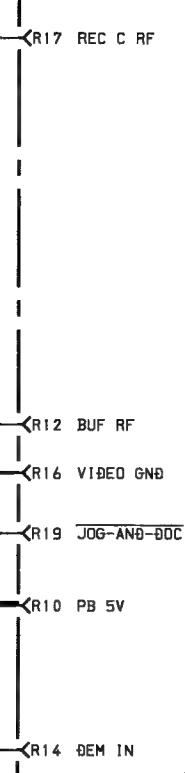
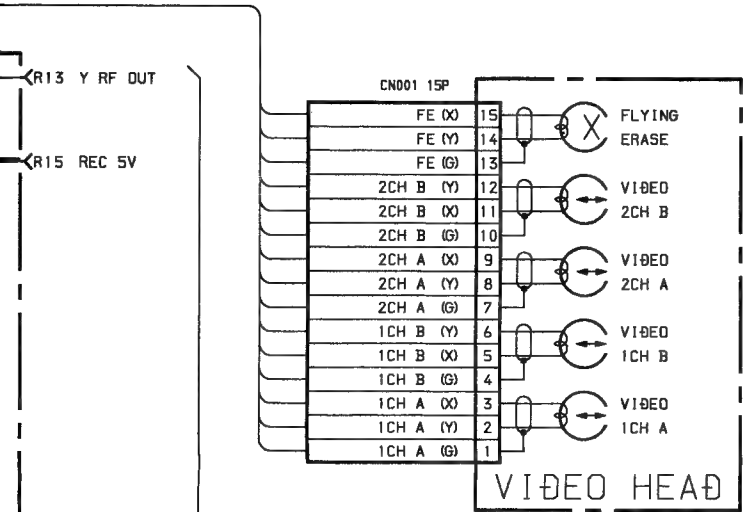


TO
VS-95 BOARD
(2/3)

(See Page 41, 42)

TO
VS-95 BOARD
(2/3)

(See Page 44)

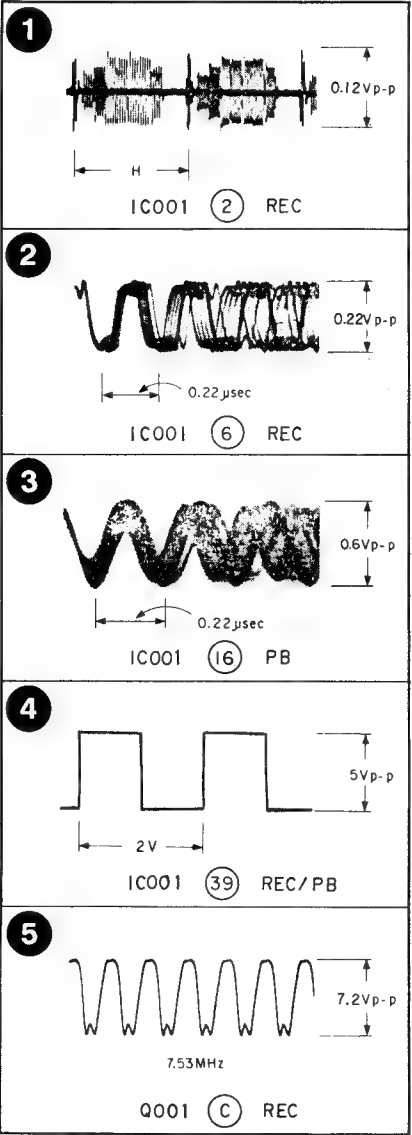


• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡➡➡
PB		➡➡	➡➡➡	➡➡➡

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➡➡➡		➡➡➡

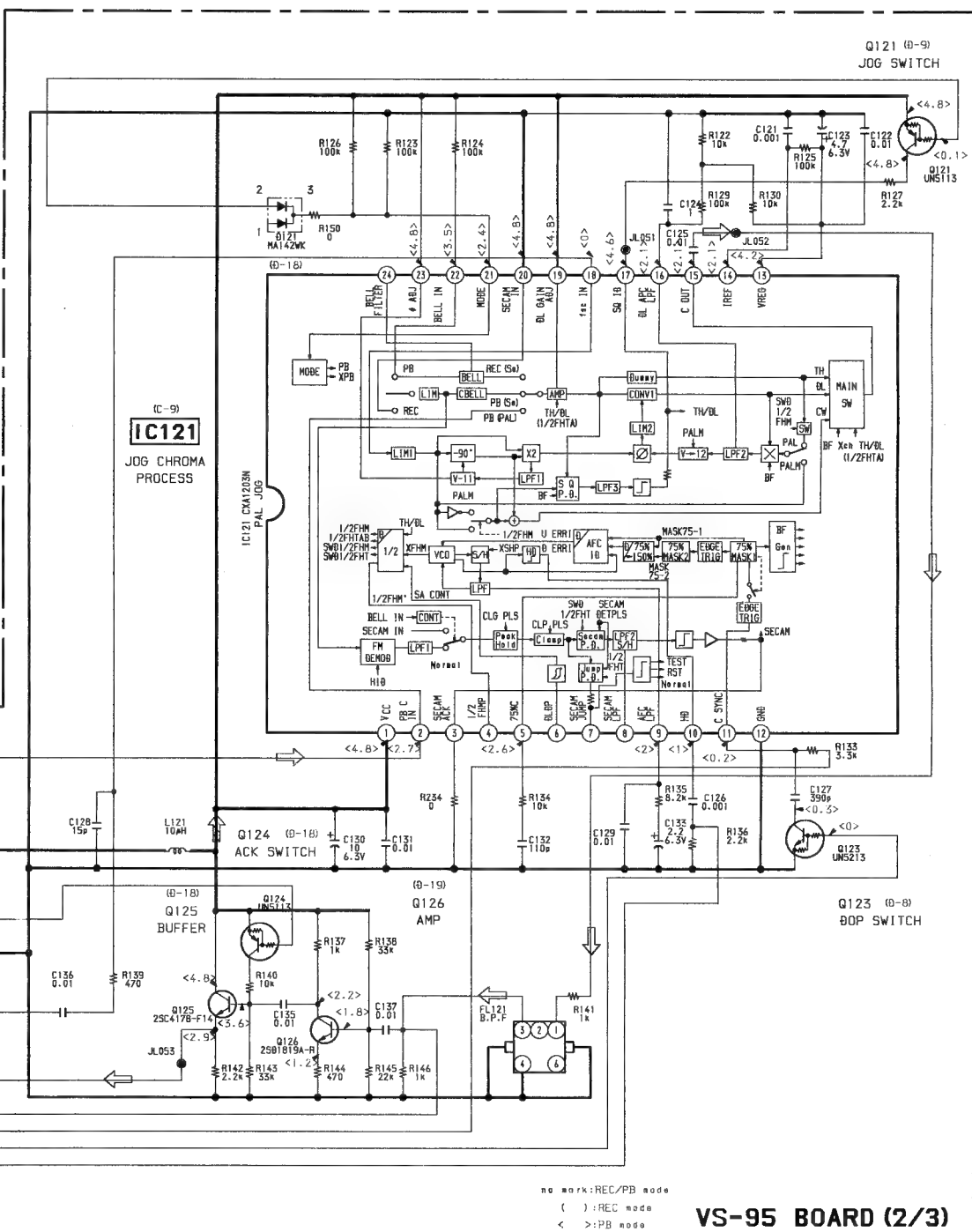
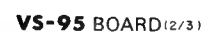
VS-95 BOARD (1/3)





TO VS-95 BOARD (3/3)





1 2 3 4 5 6 7 8 9 10

— Ref. No. VS-95 BOARD: 4000 series —

A

B

C

D

E

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I

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M

N

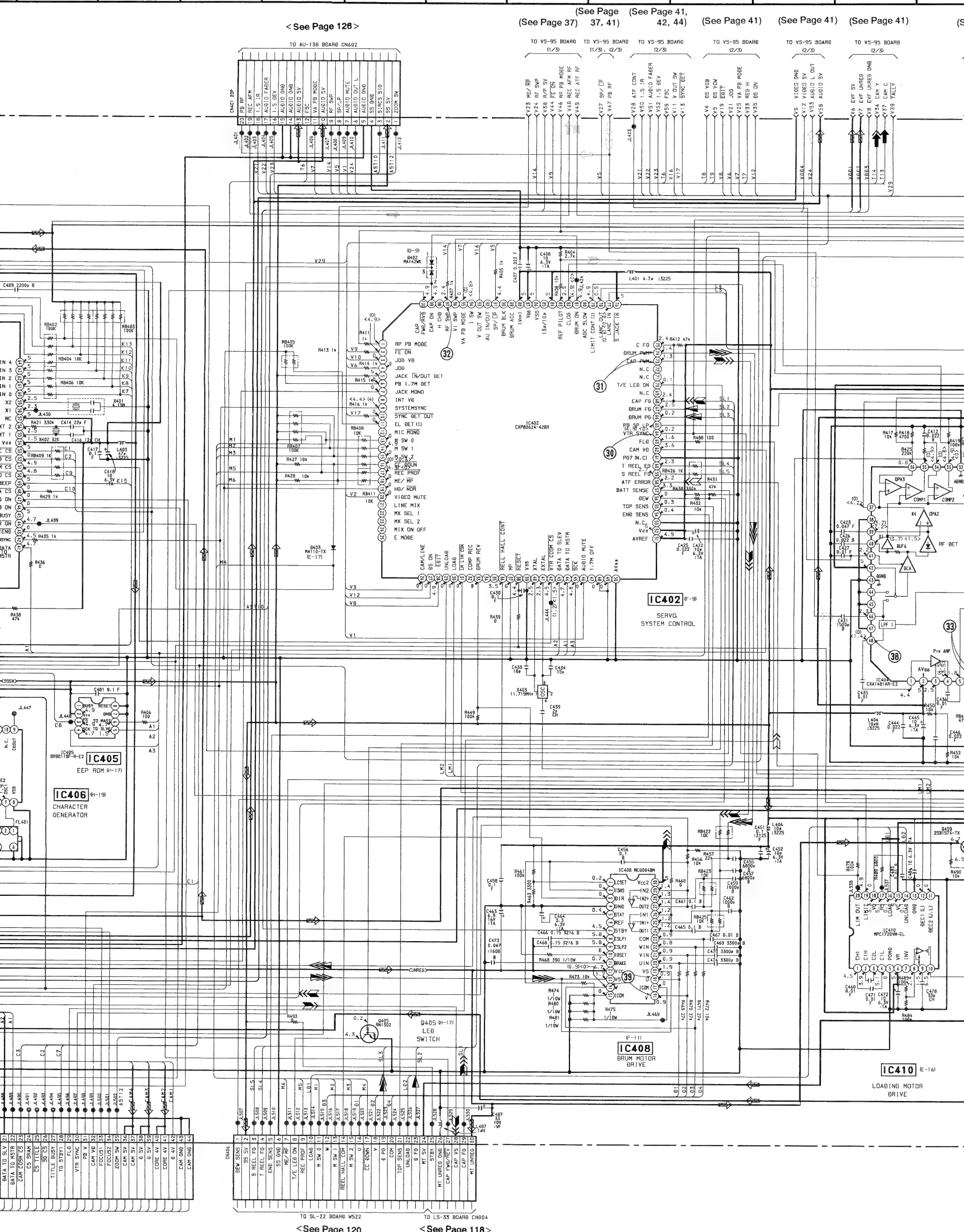
O

< See Page 117 >

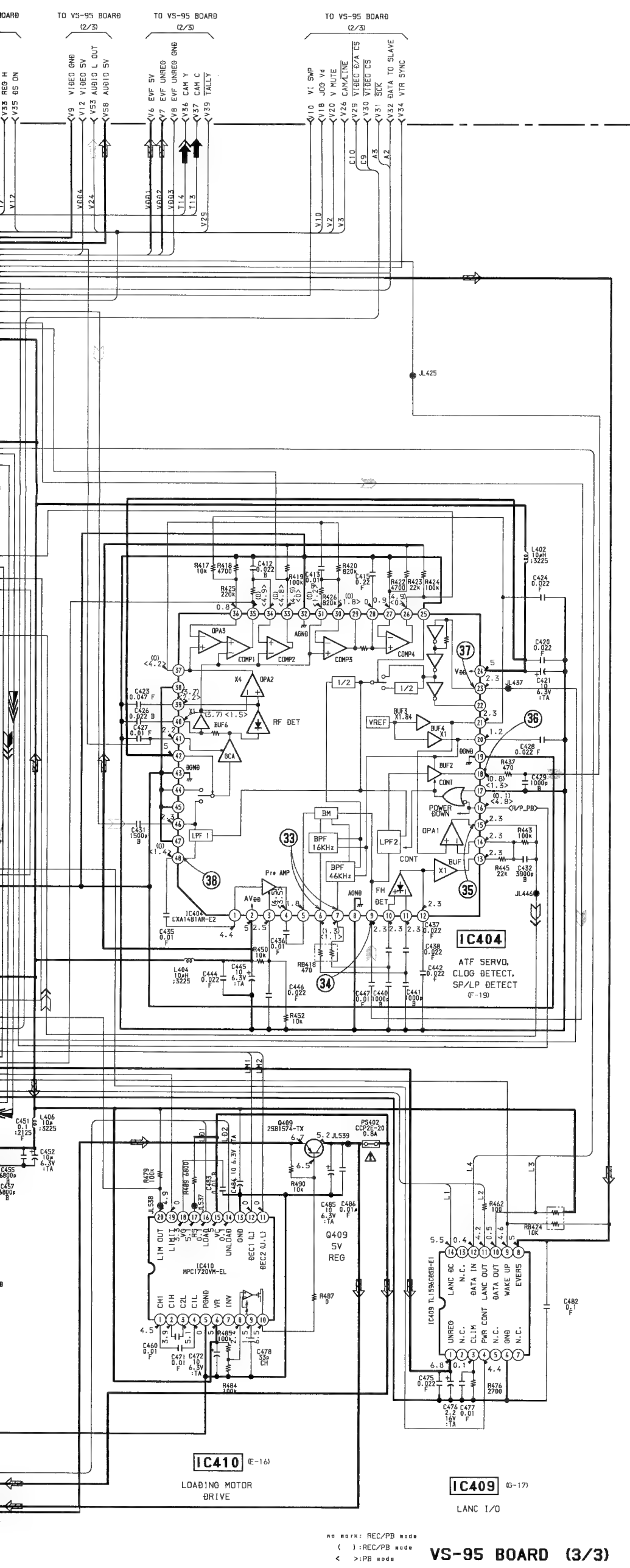
< See Page 115 >

< See Page 139 >

< See Page 90 >



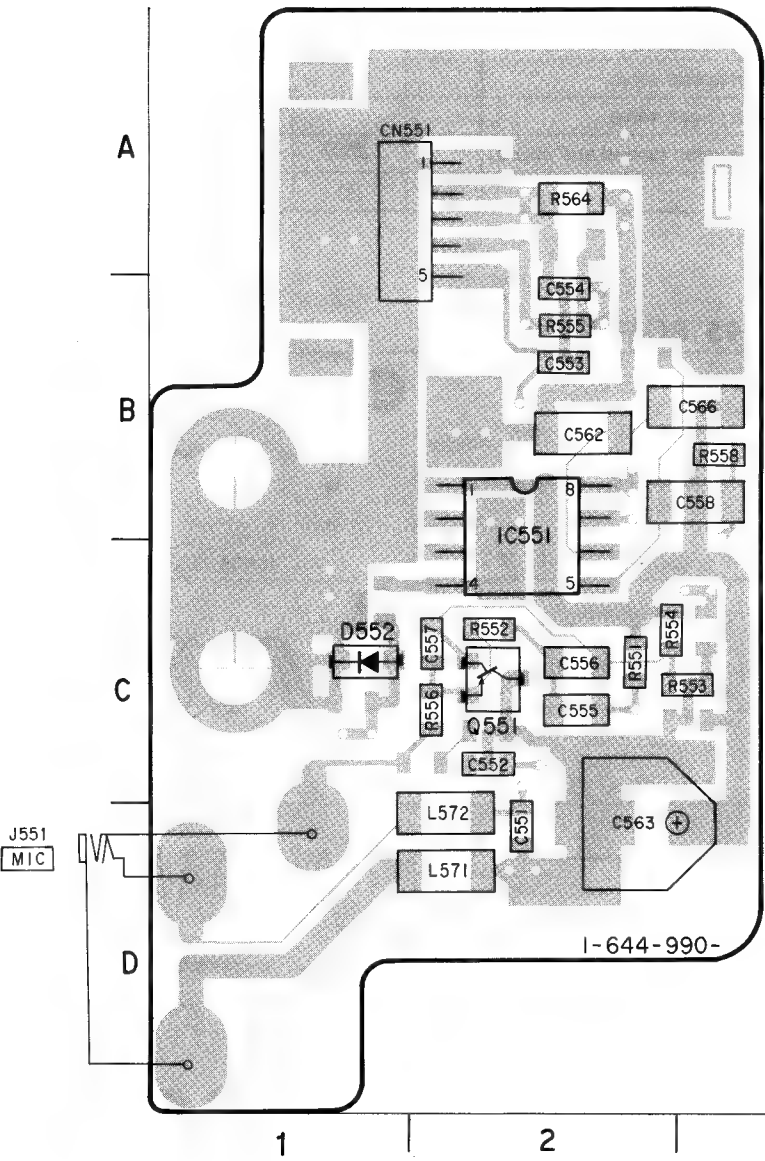
41) (See Page 41) (See Page 41) (See Page 42, 43)



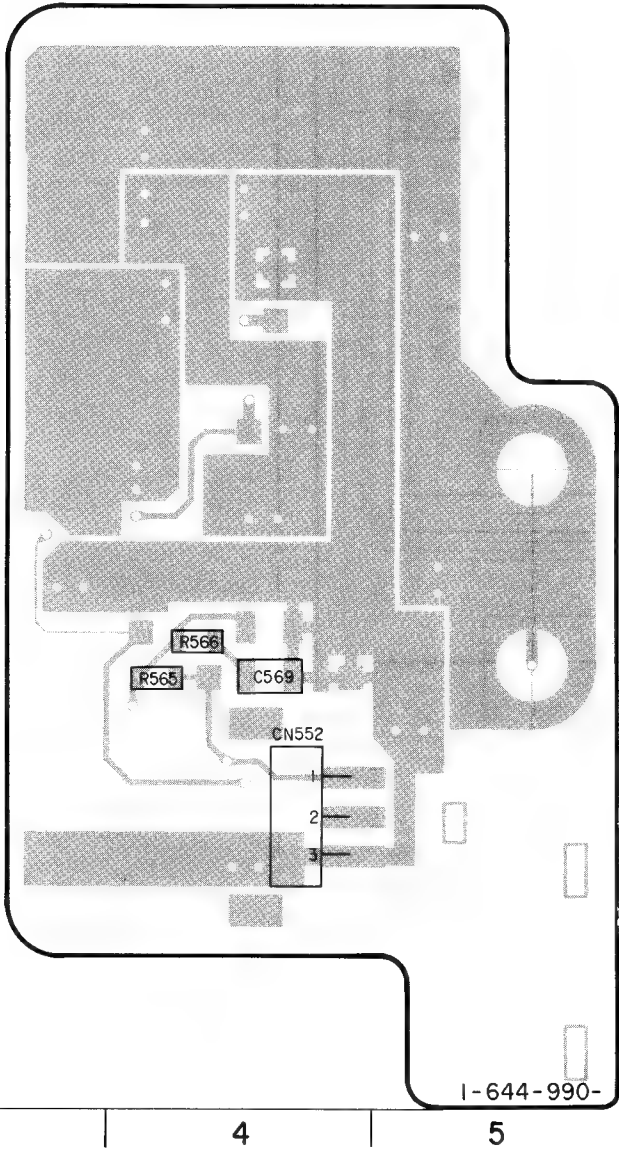
MA-149 (MIC JACK, MIC AMP) PRINTED WIRING BOARD

— Ref. No. MA-149 BOARD: 2000 series —

MA-149 BOARD (COMPONENT SIDE)



MA-149 BOARD (CONDUCTOR SIDE)



- For printed wiring boards.
- MA-149 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)
Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Component side)

< DIODE >

D552 8-719-404-46 DIODE MA110

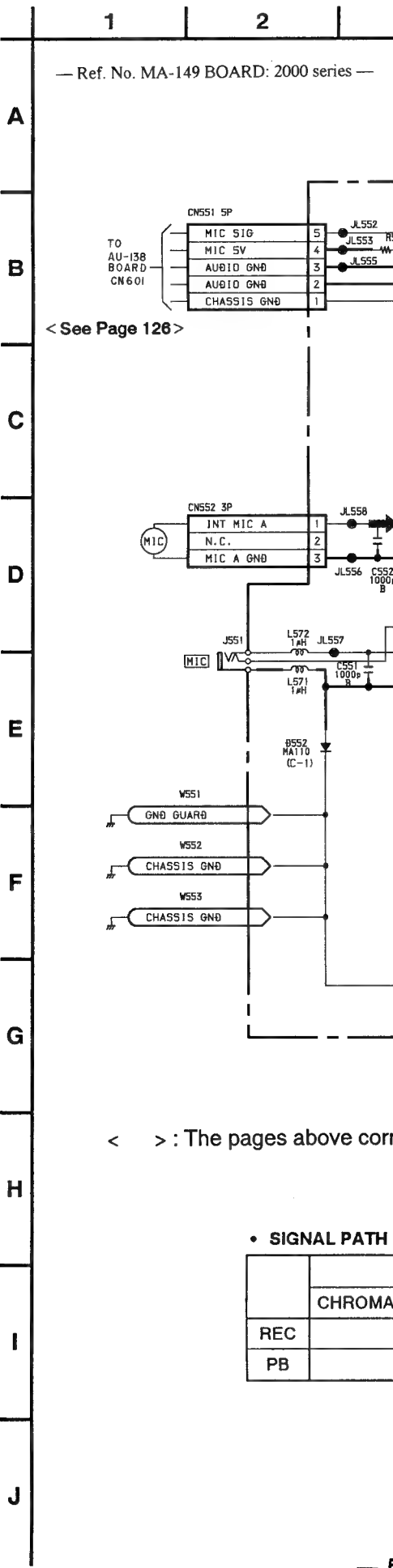
< IC >

IC551 8-759-822-37 IC LA7293M-TE-L

< TRANSISTOR >

Q551 8-729-402-55 TRANSISTOR 2SB1218A-R

MA-149 (MIC JACK, MIC AMP) SCHEMATIC



< > : The pages above contain

• SIGNAL PATH

	CHROMA
REC	
PB	

• For printed wiring boards.

- ● ○ : Through hole is omitted.

Caution:	
Pattern face side:	Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side:	Parts on the parts face side seen from the (Component side) parts face are indicated.

< DIODE >

D101	8-719-981-59	DIODE	FC805
D102	8-719-951-22	DIODE	1M10
D103	8-719-802-36	DIODE	1SS250

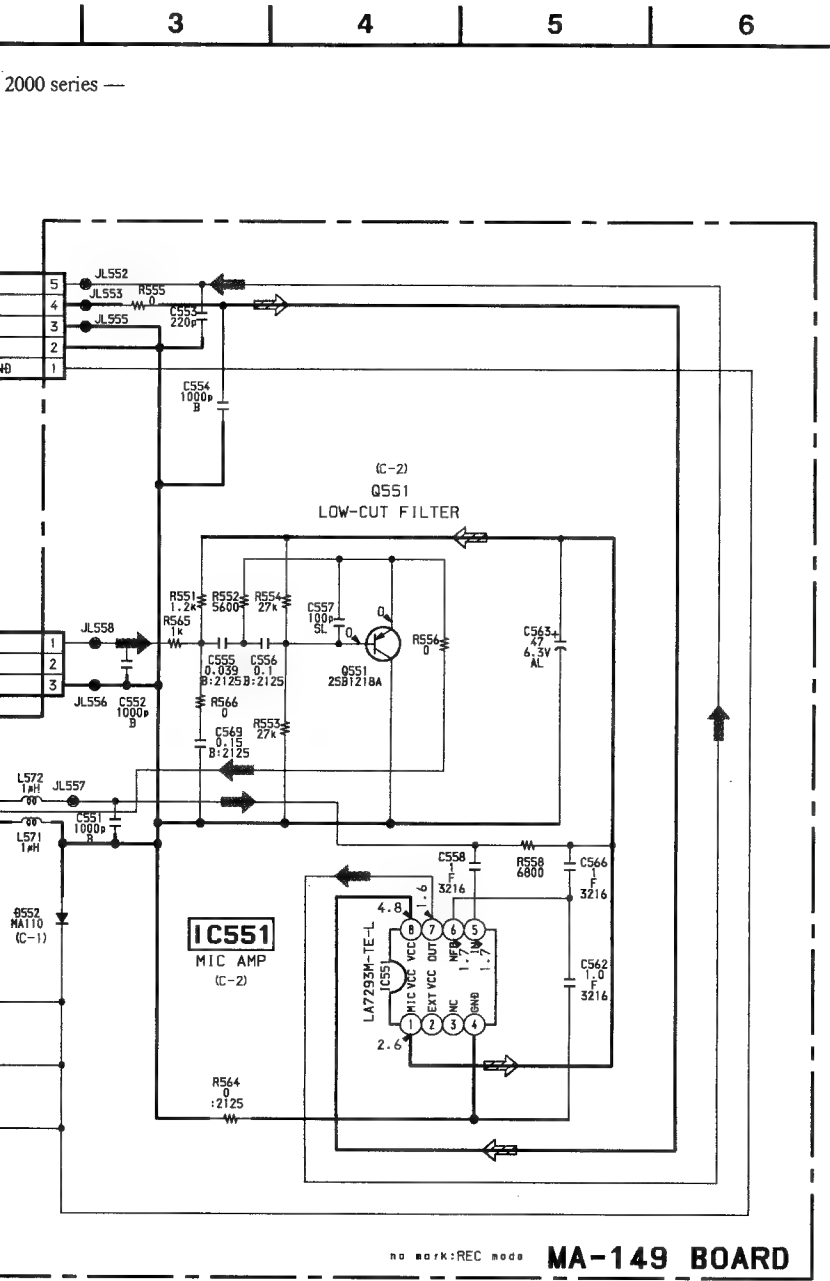
< IC >

IC101	8-759-070-30	IC	MB3776APNF-G-BND
IC102	8-759-998-92	IC	LM393D
IC103	8-759-998-98	IC	LM358D

< TRANSISTOR >

Q101	8-729-808-01	TRANSISTOR	2SD162
Q102	8-729-421-90	TRANSISTOR	XN4113
Q103	8-729-420-12	TRANSISTOR	XN4213
Q104	8-729-120-28	TRANSISTOR	2SC162
Q105	8-729-905-23	TRANSISTOR	2SA157
Q106	8-729-011-35	TRANSISTOR	2SK129
Q107	8-729-403-27	TRANSISTOR	XN4401
Q108	8-729-120-28	TRANSISTOR	2SC162
Q109	8-729-905-23	TRANSISTOR	2SA157

C AMP) SCHEMATIC DIAGRAM

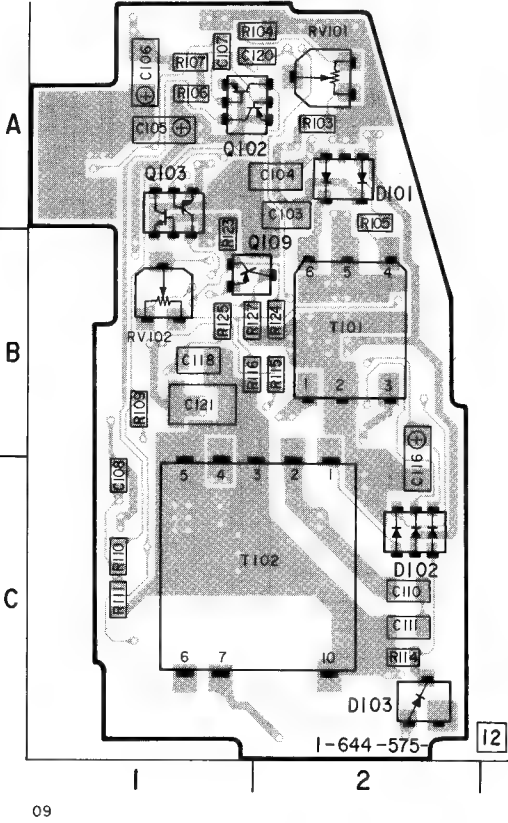


as above correspond to CCD-TR303E/TR303EP SERVICE MANUAL.

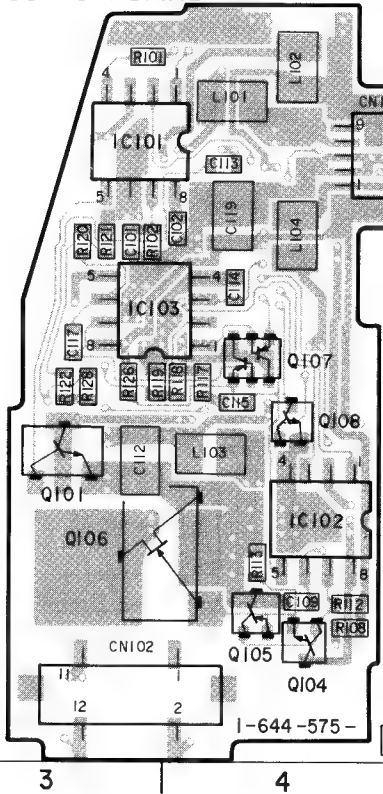
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				➡

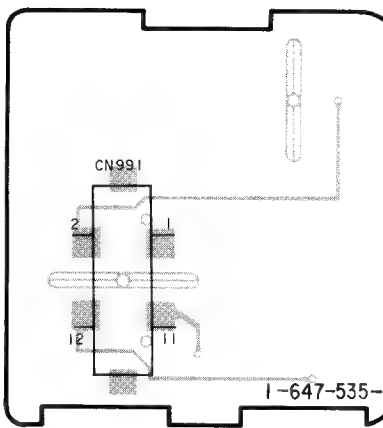
IV-10 BOARD (COMPONENT SIDE)



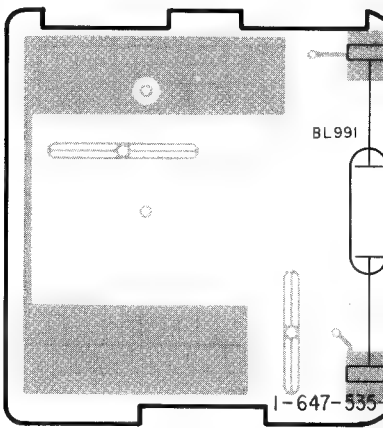
IV-10 BOARD (CONDUCTOR SIDE)



LB-33 BOARD (COMPONENT SIDE)



LB-33 BOARD (CONDUCTOR SIDE)



9000 series, CL-29, IV-10 BOARDS: 9000 series —

ards.
sted.
on the pattern face side seen from
pattern face are indicated.
on the parts face side seen from the
face are indicated.

OE >

< TRANSISTOR >			
FC805	Q101	8-729-808-01 TRANSISTOR	2SD1622-S
IMN10	Q102	8-729-421-90 TRANSISTOR	XN4113
ISS250	Q103	8-729-420-12 TRANSISTOR	XN4213
	Q104	8-729-120-28 TRANSISTOR	2SC1623-L5L6
	Q105	8-729-905-23 TRANSISTOR	2SA1576-R
MB3776APNF-G-BND	Q106	8-729-011-35 TRANSISTOR	2SK1299S
CM393D	Q107	8-729-403-27 TRANSISTOR	XN4401
CM358D	Q108	8-729-120-28 TRANSISTOR	2SC1623-L5L6
	Q109	8-729-905-23 TRANSISTOR	2SA1576-R

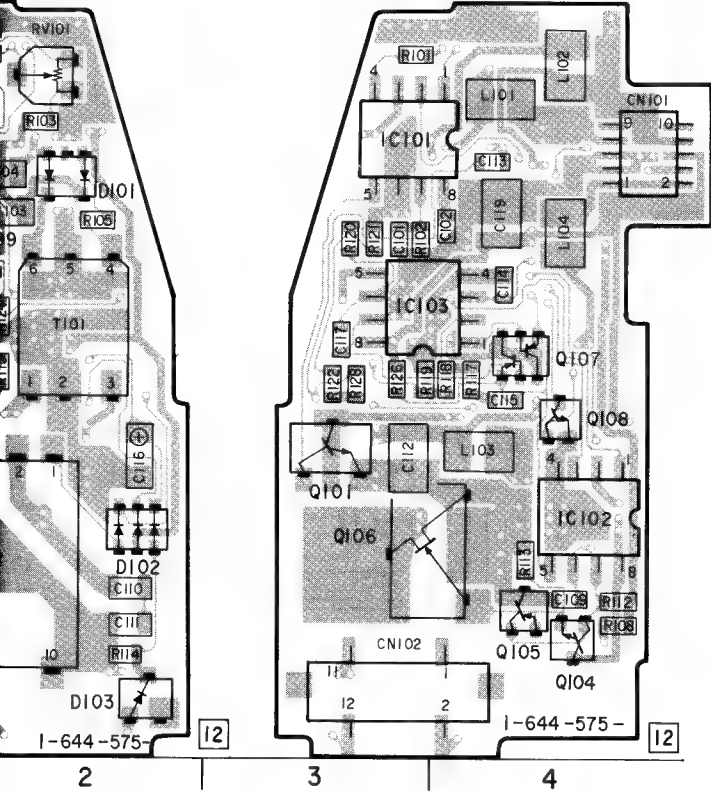
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D901	8-719-980-83 DIODE	GL3PR43	
D902	8-719-941-34 DIODE	GL-1HD51	
D903	8-719-421-18 DIODE	MA8033-L	
D904	8-719-820-05 DIODE	ISS181	
D905	8-719-002-81 DIODE	IT363	
D906	8-719-404-46 DIODE	MA110	
D907	8-719-420-14 DIODE	MA8082-M	
D908	8-719-420-14 DIODE	MA8082-M	

< IC >			
IC901	8-759-070-66 IC	IR3P961	
IC902	8-759-513-06 IC	ETM3011FOA	
IC903	8-759-159-97 IC	ETM3021FOA	

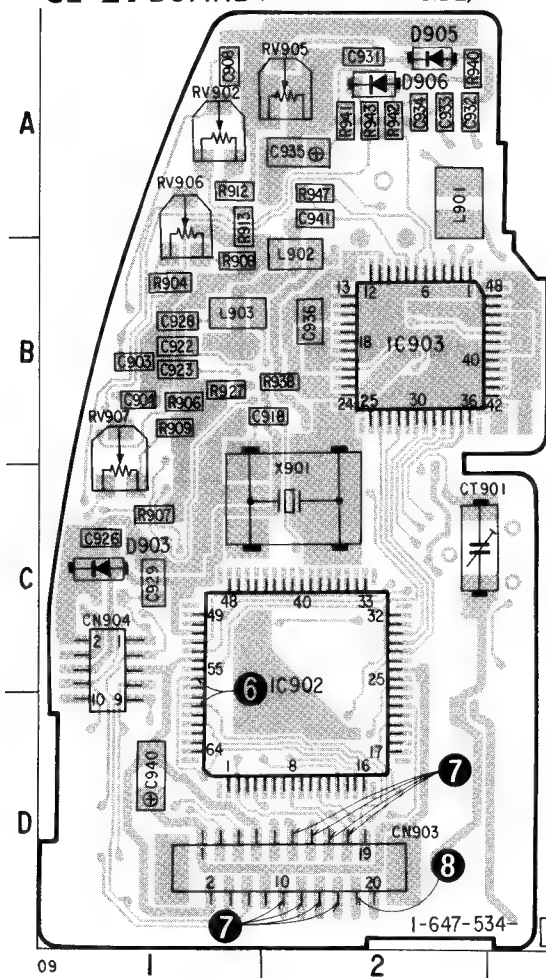
< TRANSISTOR >			
Q901	8-729-402-81 TRANSISTOR	XN4501	

COMPONENT SIDE)

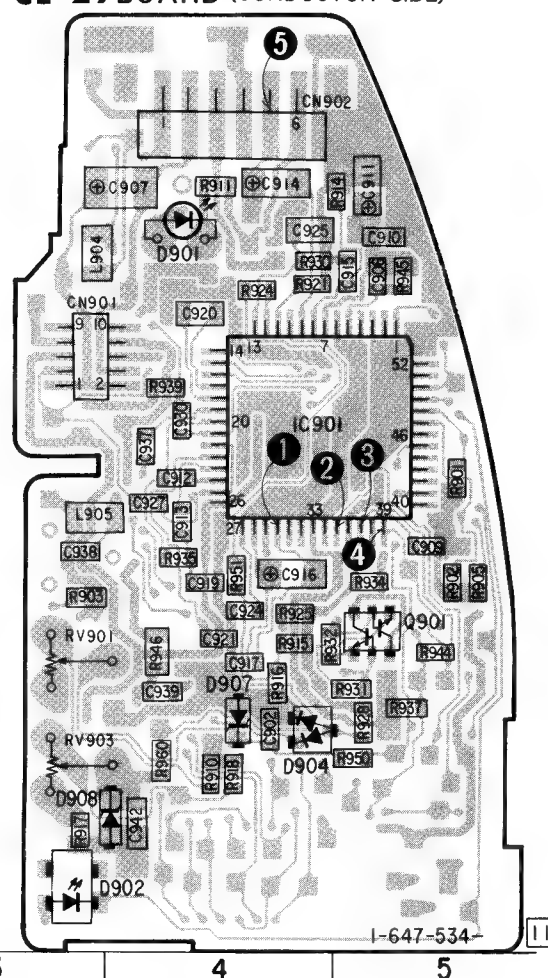
IV-10 BOARD (CONDUCTOR SIDE)



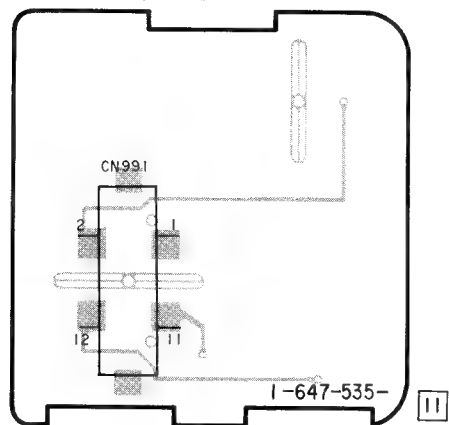
CL-29 BOARD (COMPONENT SIDE)



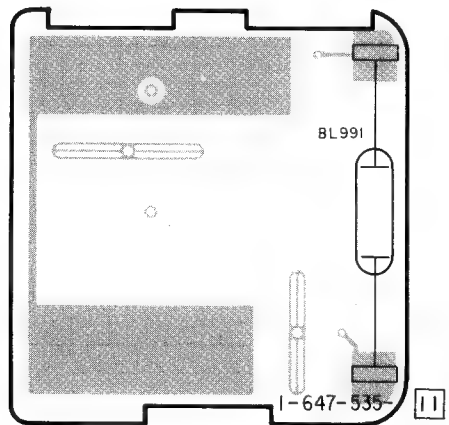
CL-29 BOARD (CONDUCTOR SIDE)



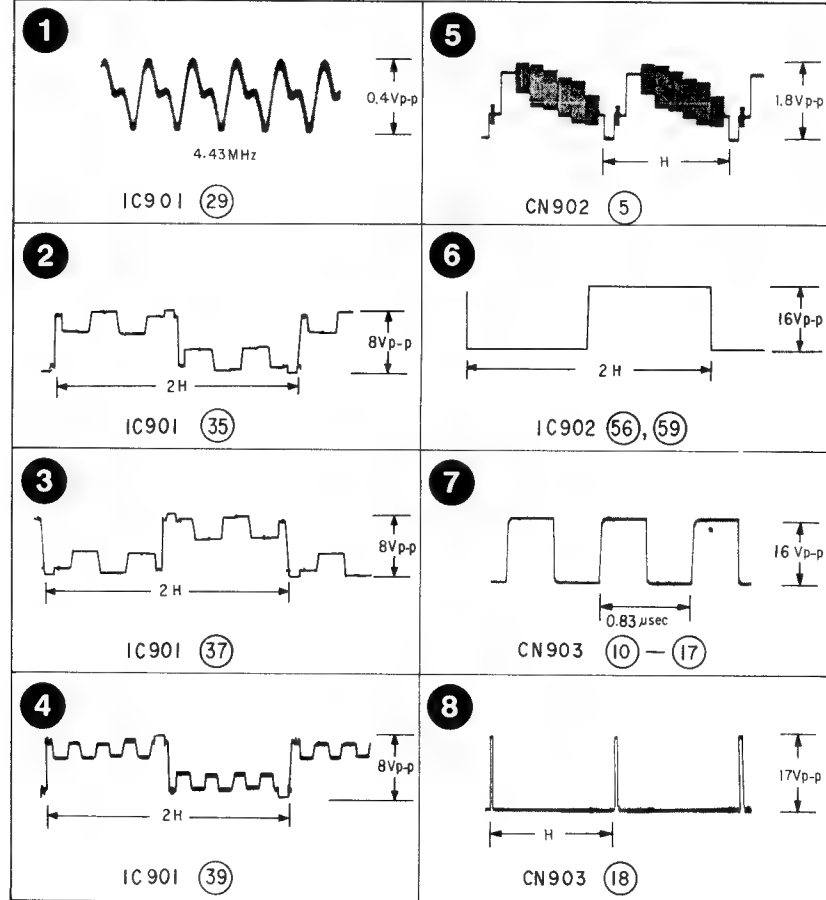
LB-33 BOARD (COMPONENT SIDE)



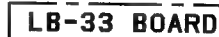
LB-33 BOARD (CONDUCTOR SIDE)



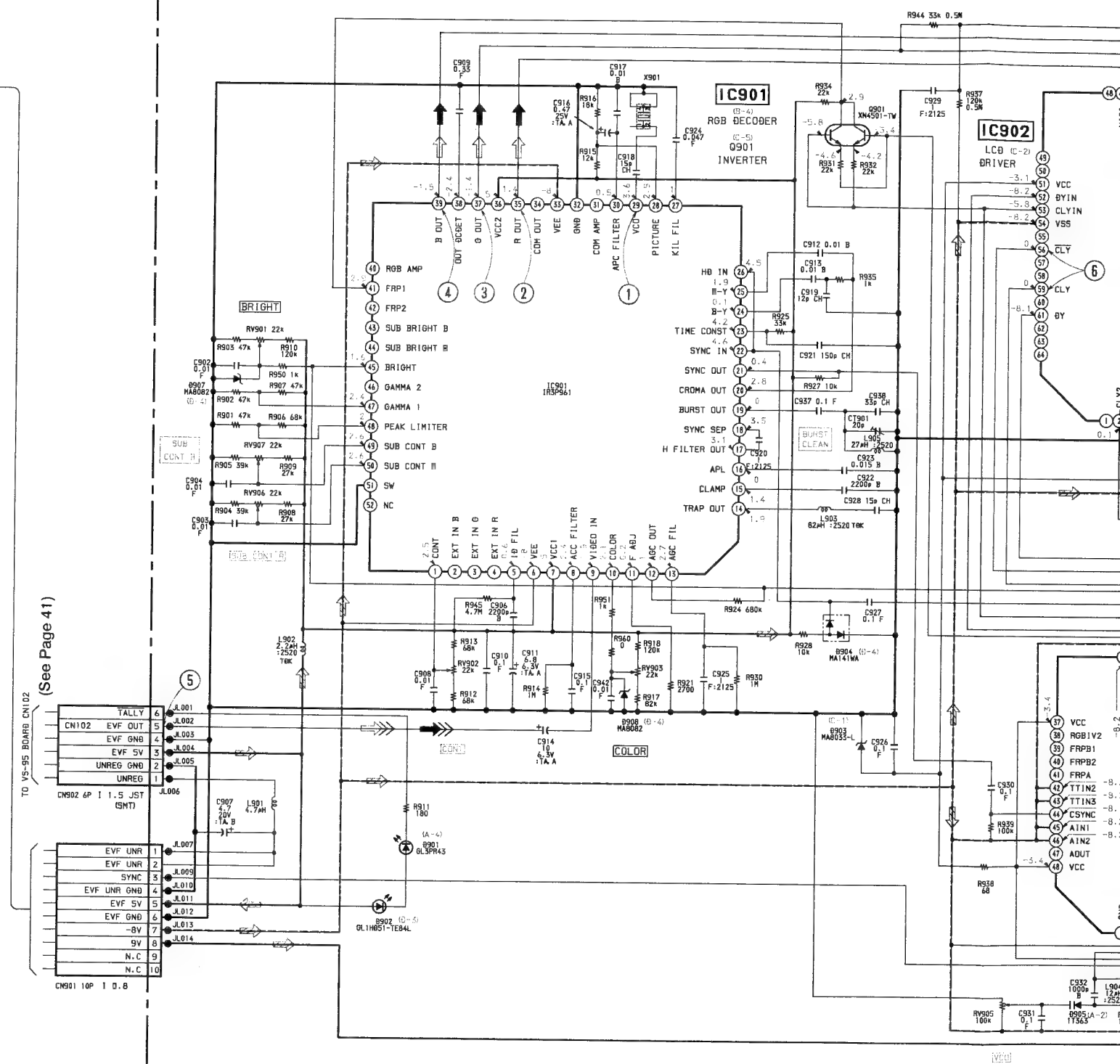
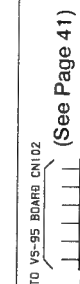
CL-29 BOARD

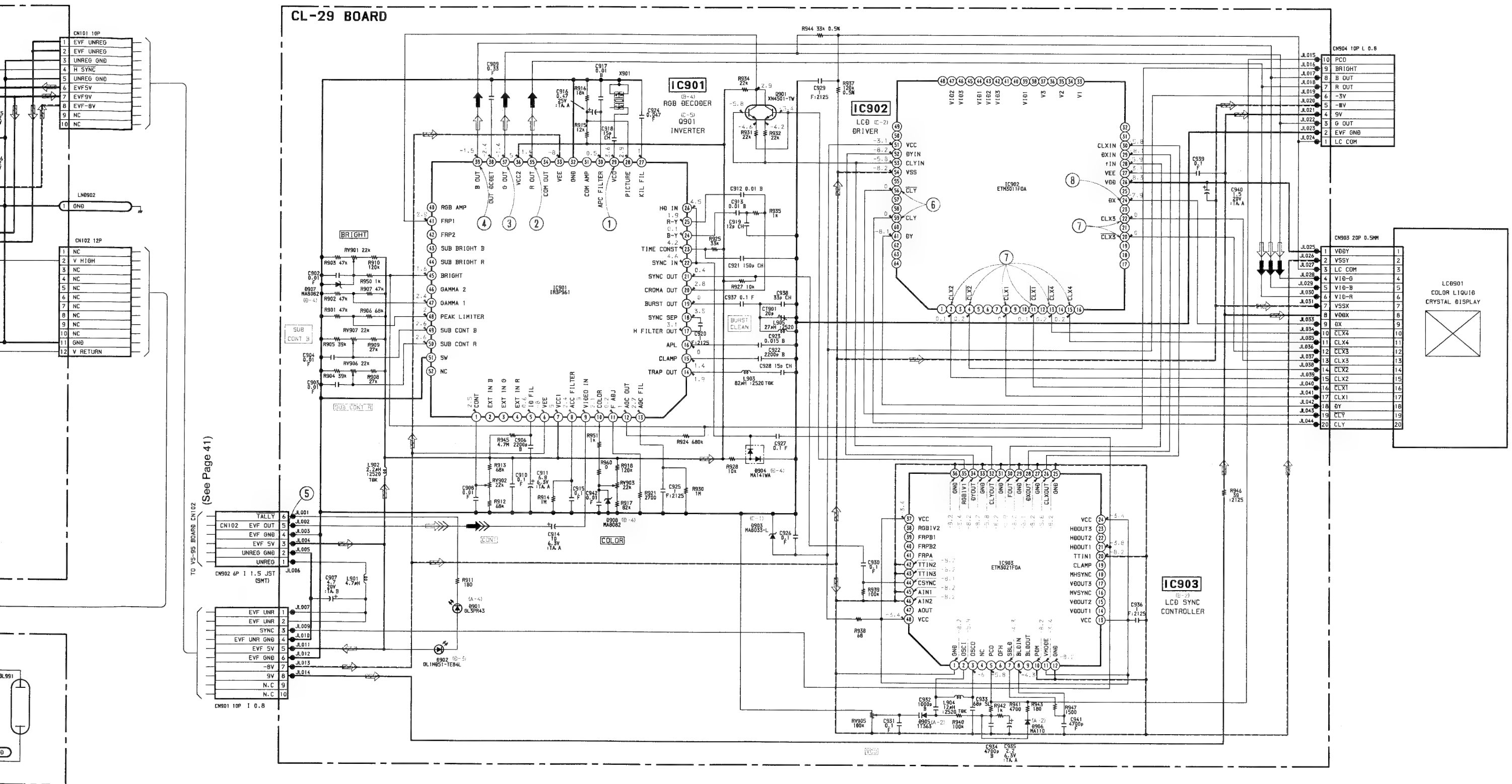


A	—
B	—
C	—
D	—
E	
F	
G	
H	
I	
J	



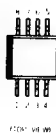
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡		➡➡➡	
PB	➡		➡➡➡	



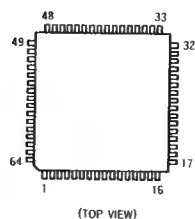


4-3. SEMICONDUCTORS

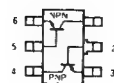
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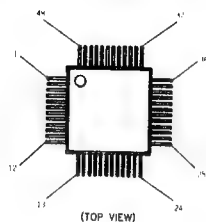
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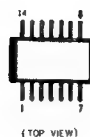
XN4312



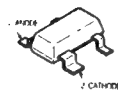
CXA1202R
CXA1208R
CXA1481AR
ETM3021F0A
IR3P90B



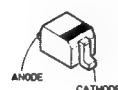
LM358D
LM393D



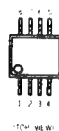
GL1HD51



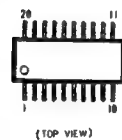
MA110



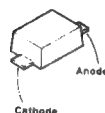
CXA1211M



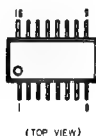
M62353GP
 μ PD7564G-540



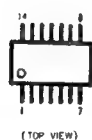
MA8082



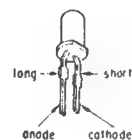
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CXL1506M



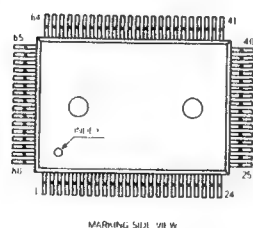
TL1596CDSB



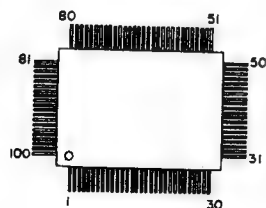
GL3PR43



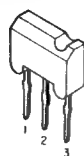
μ PD75316GF



CXP80624-413R
CXP80624-428R/434R



XN4213
UMZ1



SECTION 5

EXPLODED VIEWS

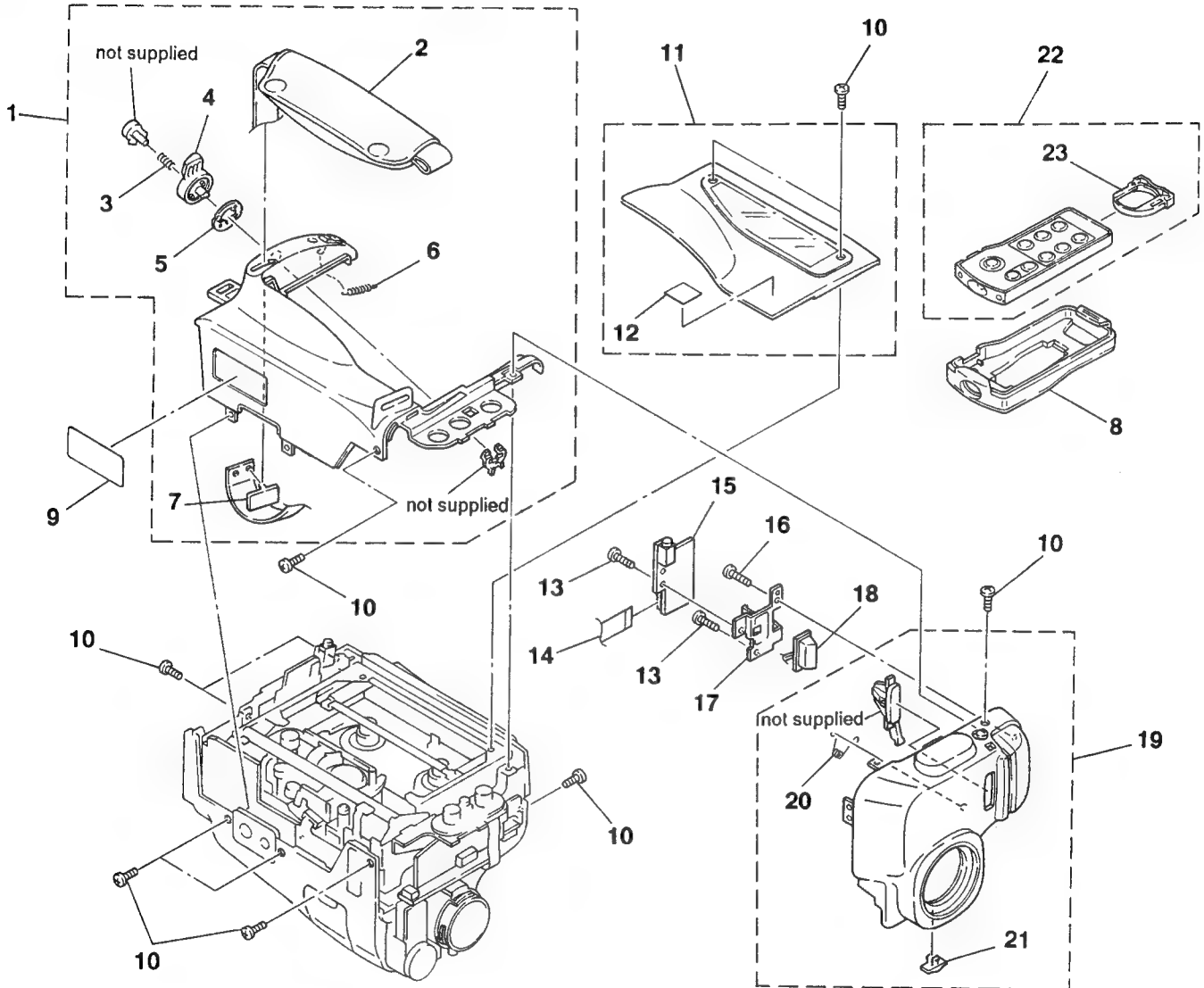
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

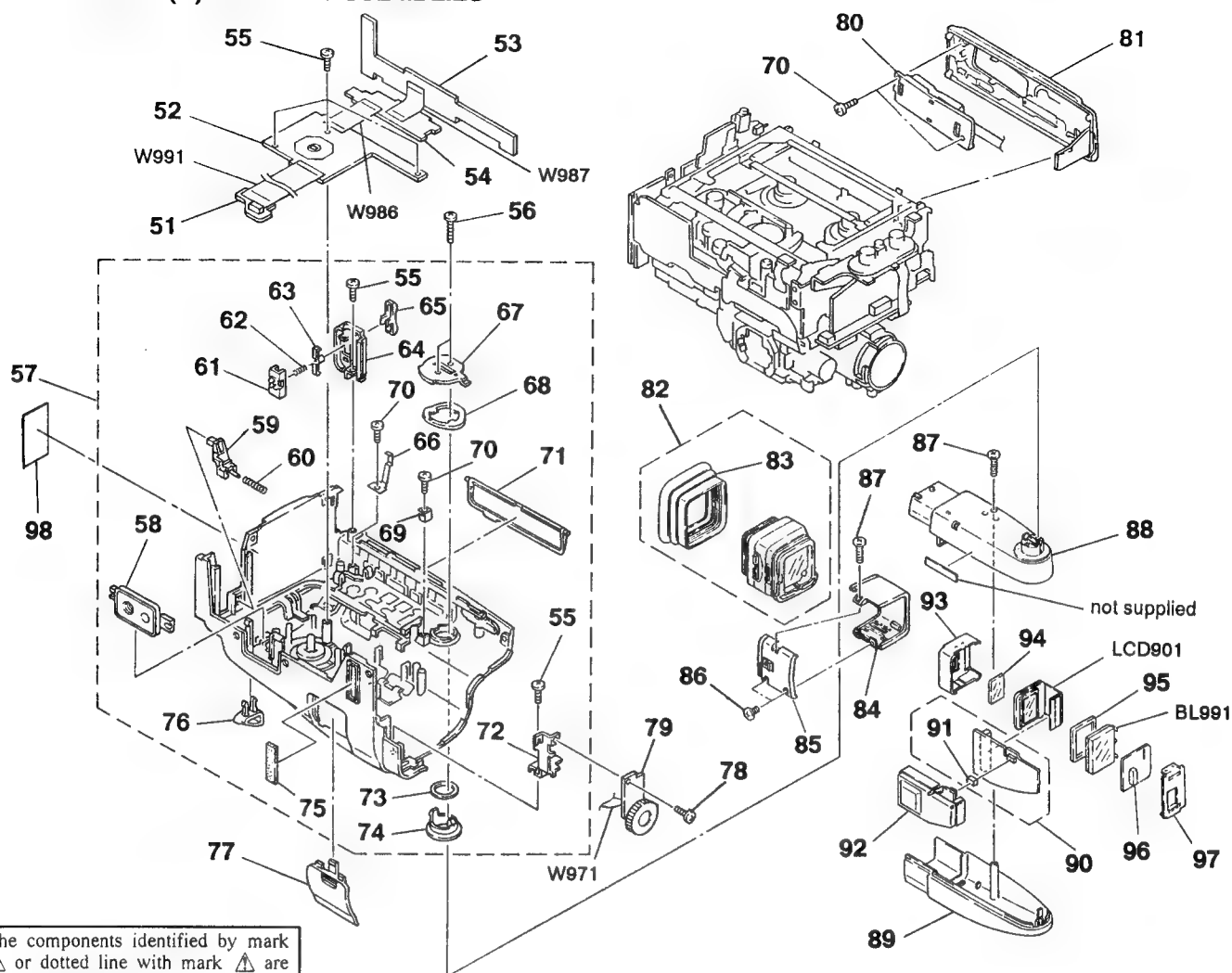
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.



5-1. CABINET (L) AND F PANEL ASSEMBLIES





Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY		* 12	3-703-713-41	STICKER, SONY SYMBOL (10)	
2	3-736-807-01	BELT, GRIP		13	3-713-790-21	SCREW (M2X6), TAPPING, P3	
3	3-578-221-00	SPRING, COMPRESSION		14	1-696-487-12	CABLE, FLAT (FFC-90)	
4	3-942-985-01	KNOB, STAND-BY		15	A-7063-518-A	MA-149 BOARD, COMPLETE	
5	3-736-364-01	SPRING		16	3-719-601-01	SCREW (B2X5), TAPPING	
6	4-602-490-00	SPRING, TENSION		* 17	3-949-000-01	RETAINER, MICROPHONE	
7	3-942-895-01	STOPPER, BELT		18	A-7091-800-A	MICROPHONE UNIT	
8	3-943-154-11	HOLDER (B), REMOTE CONTROL		19	X-3941-891-1	PANEL ASSY, F	
* 9	3-952-613-01	LABEL, MODEL NUMBER (AEP)		20	3-947-357-01	SPRING, TORSION	
* 9	3-952-616-01	LABEL, MODEL NUMBER (UK, E, Australian)		21	3-945-269-01	KNOB, S	
10	3-719-381-01	SCREW (M2X4)		22	1-465-927-81	REMOTE COMMANDER (CAM CORDER) (RMT-507)	
11	X-3942-632-1	LID ASSY, CASSETTE		23	3-708-412-01	LID, REMOTE COMMANDER	

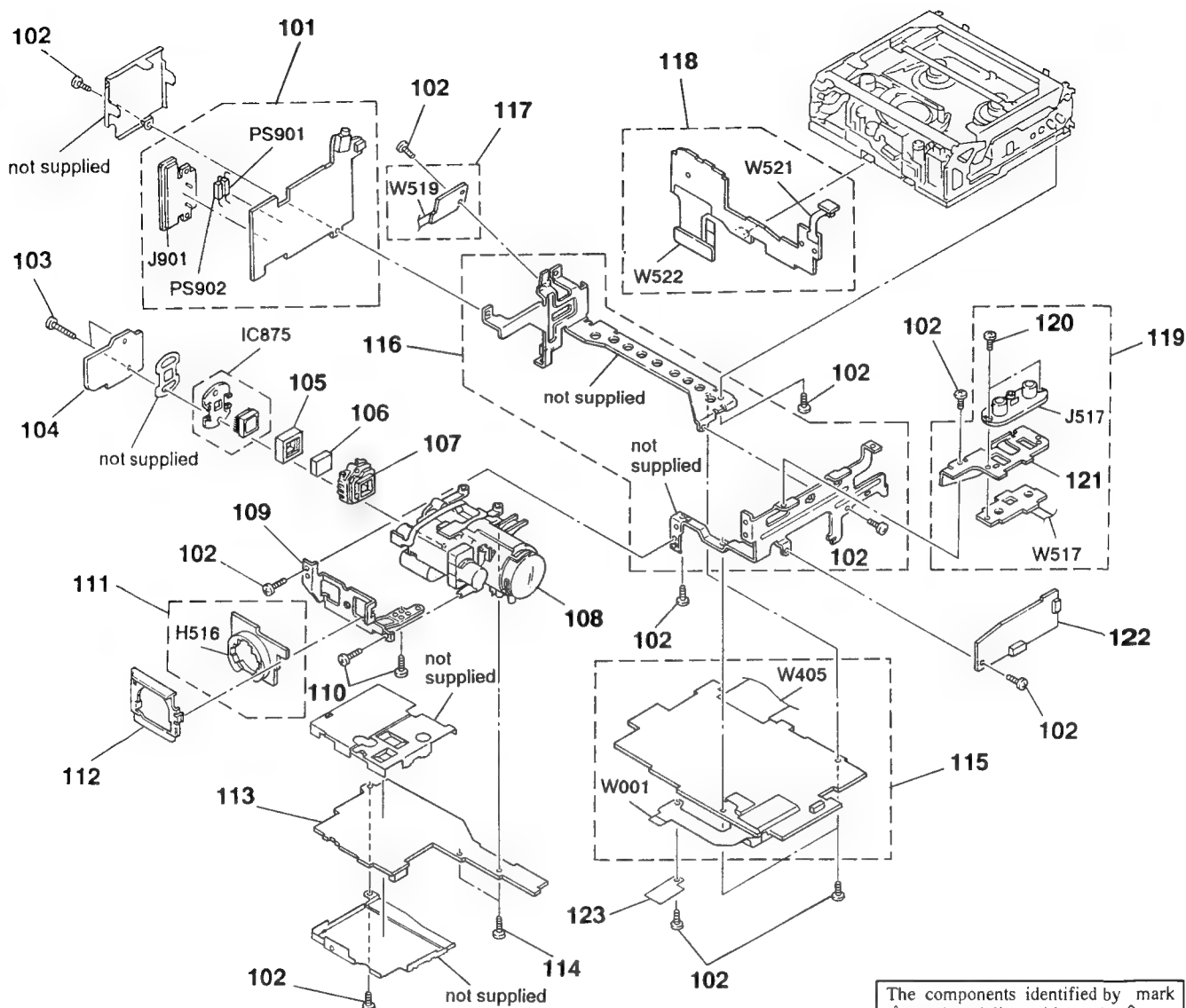
5-2. CABINET (R) AND EVF ASSEMBLIES





The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	A-7071-694-A	CN-65 BOARD, COMPLETE		76	3-948-989-01	KNOB, BATTERY	
52	A-7071-655-A	CF-32 BOARD, COMPLETE		77	3-948-843-01	LID, BATTERY CASE, LITHIUM	
53	A-7071-653-A	VK-27 BOARD, COMPLETE		78	3-713-786-51	SCREW (M2X3)	
54	A-7071-654-A	ED-35 BOARD, COMPLETE		79	A-7071-656-A	MF-191 BOARD, COMPLETE	
55	3-713-790-21	SCREW (M2X6), TAPPING, P3		80	1-692-257-11	SWITCH, PUSH (ZOOM)	
56	3-740-546-61	SCREW (M2X10.5)		81	X-3941-894-1	LID ASSY, LS	
57	X-3942-156-1	CABINET (R) ASSY		82	X-3942-758-1	HOLDER ASSY, FINDER	
58	3-942-911-01	SCREW, TRIPOD		83	3-948-162-01	EYE CUP	
59	3-948-990-01	LOCK, BATTERY		84	X-3942-633-1	SLIDER (UPPER) ASSY	
60	3-426-508-00	SPRING, COMPRESSION		85	X-3942-634-1	SLIDER (LOWER) ASSY	
61	3-948-839-01	BLIND, POWER		86	3-719-381-31	SCREW (M2X3)	
62	3-303-973-00	SPRING, COMPRESSION		87	3-944-591-01	SCREW (M2X7), TAPPING	
63	3-946-186-01	PUSH BUTTON, POWER		88	X-3942-757-1	CABINET (L) ASSY, EVF	
64	3-948-975-01	POWER (BASE)		89	3-944-590-71	CABINET (R), EVF	
65	3-946-248-01	BUTTON, POWER		90	A-7063-502-A	CL-29 BOARD, COMPLETE	
66	3-948-988-01	SPRING, LEAF, VK		91	1-573-989-11	CONNECTOR, BOARD TO BOARD 10P	
67	3-747-111-01	PLATE, LOCK, TILT		 92	A-7063-224-A	IV-10 BOARD, COMPLETE (AC/DC CONVERTER)	
68	3-747-110-01	SPRING, LEAF, TILT		* 93	3-952-611-01	HOLDER (F), BL	
69	3-747-178-01	REINFORCEMENT, TILT LOCK		* 94	3-952-612-01	PROTECTOR, LCD	
70	3-719-601-01	SCREW (B2X5), TAPPING		95	3-944-611-01	SPONGE, SEAL	
71	3-948-976-01	DOOR, CONTROL		96	A-7071-789-A	LB-33 BOARD, COMPLETE	
* 72	3-948-987-01	FRAME, MF		97	3-944-610-01	HOLDER (R), BL	
73	3-747-112-01	RING, TILT		98	3-704-235-01	LABEL, CAUTION (UK)	
74	3-747-109-01	SLEEVE, EVF		 BL991	1-519-667-11	TUBE, FLUORESCENT	
75	3-949-008-01	SHEET, FOOT		LCD901	1-810-046-11	DISPLAY MODULE, LIQUID CRYSTAL	

5-3. MAIN BOARD ASSEMBLY



The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
△101	A-7063-320-A	DD-48 BOARD, COMPLETE		119	A-7063-266-A	JK-91 BOARD, COMPLETE	
102	3-713-786-51	SCREW (M2X3)		120	3-719-381-01	SCREW (M2X4)	
103	3-947-268-01	SCREW (B TIGHT) (2), TAPPING					
104	A-7063-318-A	CD-92 BOARD, COMPLETE		* 121	3-948-974-01	FRAME (M), JACK	
105	3-946-857-01	RUBBER (S), SEAL		122	A-7063-321-A	AU-138 BOARD, COMPLETE	
				123	3-951-136-02	SHIELD, DRUM	
106	1-547-558-21	FILTER BLOCK, OPTICAL		H516	1-550-104-32	HOLDER, BATTERY	
107	3-946-856-01	ADAPTOR (H), CCD FITTING		IC875	A-7030-369-A	CCD BLOCK ASSY (ICX055AK-2) (CCD IMAGER)	
108	1-547-548-11	LENS, ZOOM (VCL-6210WC)					
* 109	3-949-001-01	FRAME, LENS		J517	1-537-142-21	TERMINAL BOARD	
110	3-713-790-21	SCREW (M2X6), TAPPING, P3		J901	1-537-281-41	TERMINAL BOARD	
				△PS901	1-532-841-21	LINK, IC 1.6A/90V	
111	A-7071-652-A	LI-44 BOARD, COMPLETE		△PS902	1-532-841-21	LINK, IC 1.6A/90V	
112	3-948-842-01	HOLDER, LI		W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
113	A-7063-317-A	VC-122 BOARD, COMPLETE					
114	3-719-601-01	SCREW (B2X5), TAPPING		W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
115	A-7063-501-A	VS-95 BOARD, COMPLETE		W517	1-696-482-11	CABLE, FLAT (FFC-85)	
				W519	1-696-488-11	CABLE, FLAT (FFC-92)	
* 116	X-3942-209-1	FRAME (UPPER LOWER) ASSY		W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
117	A-7071-651-A	SW-205 BOARD, COMPLETE		W522	1-644-490-11	FP-589 FLEXIBLE BOARD	
118	A-7063-319-A	SL-27 BOARD, COMPLETE					

CL-29

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- Hardware (# mark) list is given in the last of this parts list.

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
	A-7063-502-A	CL-29 BOARD, COMPLETE ***** (Ref.No 9,000 Series)					
	1-573-989-11	CONNECTOR, BOARD TO BOARD 10P					
	3-944-643-01	HOLDER, LED					
		< CAPACITOR >					
C902	1-162-974-11	CERAMIC CHIP 0.01uF 10%	10V	C940	1-135-178-11	TANTAL. CHIP 1.5uF 20%	20V
C903	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C941	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	25V
C904	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C942	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C906	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V			< CONNECTOR >	
C907	1-135-214-21	TANTAL. CHIP 4.7uF 20%	20V	CN901	1-573-305-11	CONNECTOR, BOARD TO BOARD 10P	
				CN902	1-573-806-21	PIN, CONNECTOR (1.5MM) (SMD)6P	
C908	1-162-974-11	CERAMIC CHIP 0.01uF	50V	CN903	1-750-504-21	CONNECTOR, ZIF (I TYPE) 20P	
C909	1-165-112-11	CERAMIC CHIP 0.33uF	16V	CN904	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P	
C910	1-164-156-11	CERAMIC CHIP 0.1uF	25V			< TRIMMER >	
C911	1-135-211-11	TANTAL. CHIP 6.8uF 20%	6.3V	CT901	1-141-423-61	CAP, ADJ	
C912	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V			< DIODE >	
				D901	8-719-980-83	DIODE GL3PR43	
C913	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	D902	8-719-941-34	DIODE GL-1HD51	
C914	1-135-259-11	TANTAL. CHIP 10uF 10%	6.3V	D903	8-719-421-18	DIODE MA8033-L	
C915	1-164-156-11	CERAMIC CHIP 0.1uF	25V	D904	8-719-820-05	DIODE 1SS181	
C916	1-135-145-11	TANTALUM CHIP 0.47uF 10%	35V	D905	8-719-002-81	DIODE 1T363	
C917	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	D906	8-719-404-46	DIODE MA110	
				D907	8-719-420-14	DIODE MA8082-M	
C918	1-162-917-11	CERAMIC CHIP 15PF 5%	50V	D908	8-719-420-14	DIODE MA8082-M	
C919	1-162-916-11	CERAMIC CHIP 12PF 5%	50V			< IC >	
C920	1-164-634-11	CERAMIC CHIP 1uF	16V	IC901	8-759-070-66	IC IR3P961	
C921	1-164-217-11	CERAMIC CHIP 150PF 5%	50V	IC902	8-759-513-06	IC ETM3011FOA	
C922	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V	IC903	8-759-159-97	IC ETM3021FOA	
						< COIL >	
C923	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V	L901	1-412-028-11	INDUCTOR CHIP 4.7uH	
C924	1-164-361-11	CERAMIC CHIP 0.047uF	16V	L902	1-412-943-11	INDUCTOR 2.2uH	
C925	1-164-634-11	CERAMIC CHIP 1uF	16V	L903	1-412-962-11	INDUCTOR 82uH	
C926	1-164-156-11	CERAMIC CHIP 0.1uF	25V	L904	1-412-952-11	INDUCTOR 12uH	
C927	1-164-156-11	CERAMIC CHIP 0.1uF	25V	L905	1-412-956-21	INDUCTOR 27uH	
						< TRANSISTOR >	
C928	1-162-917-11	CERAMIC CHIP 15PF 5%	50V	Q901	8-729-402-81	TRANSISTOR XN4501	
C929	1-164-634-11	CERAMIC CHIP 1uF	16V			< RESISTOR >	
C930	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R901	1-216-841-11	METAL CHIP 47K 5% 1/16W	
C931	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R902	1-216-841-11	METAL CHIP 47K 5% 1/16W	
C932	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	R903	1-216-841-11	METAL CHIP 47K 5% 1/16W	
				R904	1-216-840-11	METAL CHIP 39K 5% 1/16W	
C933	1-162-951-11	CERAMIC CHIP 68PF 5%	50V	R905	1-216-840-11	METAL CHIP 39K 5% 1/16W	
C934	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V				
C935	1-135-149-21	TANTALUM CHIP 2.2uF 20%	10V				
C936	1-164-634-11	CERAMIC CHIP 1uF	16V				
C937	1-164-156-11	CERAMIC CHIP 0.1uF	25V				
C938	1-162-921-11	CERAMIC CHIP 33PF 5%	50V				
C939	1-164-156-11	CERAMIC CHIP 0.1uF	25V				

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R906	1-216-843-11	METAL CHIP	68K	5%	1/16W		A-7063-224-A	IV-10 BOARD, COMPLETE			
R907	1-216-841-11	METAL CHIP	47K	5%	1/16W		*****				
R908	1-216-838-11	METAL CHIP	27K	5%	1/16W		(Ref. No 9,000 Series)				
R909	1-216-838-11	METAL CHIP	27K	5%	1/16W						
R910	1-216-846-11	METAL CHIP	120K	5%	1/16W	*	3-949-098-01	CASE (UPPER), SHIELD, IV			
						*	3-949-099-01	CASE (LOWER), SHIELD, IV			
R911	1-216-812-11	METAL CHIP	180	5%	1/16W		< CAPACITOR >				
R912	1-216-843-11	METAL CHIP	68K	5%	1/16W						
R913	1-216-843-11	METAL CHIP	68K	5%	1/16W		C101	1-162-953-11	CERAMIC CHIP	100PF	5% 50V
R914	1-216-857-11	METAL CHIP	1M	5%	1/16W		C102	1-164-227-11	CERAMIC CHIP	0.022uF	10% 25V
R915	1-216-834-11	METAL CHIP	12K	5%	1/16W		C103	1-164-337-11	CERAMIC CHIP	2.2uF	16V
R916	1-216-836-11	METAL CHIP	18K	5%	1/16W		C104	1-164-337-11	CERAMIC CHIP	2.2uF	16V
R917	1-216-844-11	METAL CHIP	82K	5%	1/16W		C105	1-135-179-21	TANTAL. CHIP	2.2uF	20% 16V
R918	1-216-846-11	METAL CHIP	120K	5%	1/16W						
R921	1-216-826-11	METAL CHIP	2.7K	5%	1/16W		C106	1-135-179-21	TANTAL. CHIP	2.2uF	20% 16V
R924	1-216-855-11	METAL CHIP	680K	5%	1/16W		C107	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
							C108	1-164-360-11	CERAMIC CHIP	0.1uF	16V
R925	1-216-839-11	METAL CHIP	33K	5%	1/16W		C109	1-164-672-11	CERAMIC CHIP	1500PF	5% 16V
R927	1-216-833-11	METAL CHIP	10K	5%	1/16W		C110	1-164-232-11	CERAMIC CHIP	0.01uF	10% 50V
R928	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R930	1-216-857-11	METAL CHIP	1M	5%	1/16W		C111	1-164-232-11	CERAMIC CHIP	0.01uF	10% 50V
R931	1-216-837-11	METAL CHIP	22K	5%	1/16W		C112	1-165-178-11	CERAMIC CHIP	6.8uF	16V
							C113	1-164-360-11	CERAMIC CHIP	0.1uF	16V
R932	1-216-837-11	METAL CHIP	22K	5%	1/16W		C114	1-164-360-11	CERAMIC CHIP	0.1uF	16V
R934	1-216-837-11	METAL CHIP	22K	5%	1/16W		C115	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
R935	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R937	1-218-897-11	METAL CHIP	120K	0.50%	1/16W		C116	1-135-177-21	TANTALUM CHIP	1uF	20% 25V
R938	1-216-807-11	METAL CHIP	68	5%	1/16W		C117	1-164-360-11	CERAMIC CHIP	0.1uF	16V
							C118	1-164-346-11	CERAMIC CHIP	1uF	16V
R939	1-216-845-11	METAL CHIP	100K	5%	1/16W		C119	1-165-178-11	CERAMIC CHIP	6.8uF	16V
R940	1-216-845-11	METAL CHIP	100K	5%	1/16W		C120	1-162-959-11	CERAMIC CHIP	330PF	5% 50V
R941	1-216-829-11	METAL CHIP	4.7K	5%	1/16W						
R942	1-216-822-11	METAL CHIP	1.2K	5%	1/16W		C121	1-165-178-11	CERAMIC CHIP	6.8uF	16V
R943	1-216-812-11	METAL CHIP	180	5%	1/16W		< CONNECTOR >				
R944	1-218-883-11	METAL CHIP	33K	0.50%	1/16W						
R945	1-220-397-91	METAL GLAZE	4.7M	5%	1/16W		CN101	1-573-305-11	CONNECTOR, BOARD TO BOARD	10P	
R946	1-216-015-00	METAL CHIP	39	5%	1/10W		CN102	1-573-811-11	CONNECTOR, BOARD TO BOARD	12P	
R947	1-216-823-11	METAL CHIP	1.5K	5%	1/16W		< DIODE >				
R950	1-216-821-11	METAL CHIP	1K	5%	1/16W						
							D101	8-719-981-59	DIODE	FC805	
R951	1-216-821-11	METAL CHIP	1K	5%	1/16W		D102	8-719-951-22	DIODE	1M10	
R960	1-216-864-11	METAL CHIP	0	5%	1/16W		D103	8-719-802-36	DIODE	1SS250	
< VARIABLE RESISTOR >							< IC >				
RV901	1-241-556-11	RES, ADJ, CARBON 22K (BRT)					IC101	8-759-070-30	IC	MB3776APNF-G-BND	
RV902	1-238-091-11	RES, ADJ, CERMET 22K					IC102	8-759-998-92	IC	LM393D	
RV903	1-241-556-11	RES, ADJ, CARBON 22K (COLOR)					IC103	8-759-998-98	IC	LM358D	
RV905	1-238-093-11	RES, ADJ, CERMET 100K					< COIL >				
RV906	1-238-091-11	RES, ADJ, CERMET 22K									
RV907	1-238-091-11	RES, ADJ, CERMET 22K					L101	1-412-031-11	INDUCTOR CHIP	47uH	
< VIBRATOR >							L102	1-412-031-11	INDUCTOR CHIP	47uH	
X901	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)					L103	1-412-029-11	INDUCTOR CHIP	10uH	
							L104	1-412-030-11	INDUCTOR CHIP	22uH	

IV-10

LB-33

MA-149

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
< TRANSISTOR >				* A-7071-789-A LB-33 BOARD, COMPLETE ***** (Ref.No 2,000 Series)			
Q101	8-729-808-01	TRANSISTOR	2SD1622-S	< CONNECTOR >			
Q102	8-729-421-90	TRANSISTOR	XN4113	CN991 1-573-812-11 CONNECTOR, BOARD TO BOARD 12P			
Q103	8-729-420-12	TRANSISTOR	XN4213	*****			
Q104	8-729-120-28	TRANSISTOR	2SC1623-L5L6	* A-7063-322-A MA-149 BOARD, COMPLETE ***** (Ref. No 2,000 Series)			
Q105	8-729-905-23	TRANSISTOR	2SA1576-R	< CAPACITOR >			
Q106	8-729-011-35	TRANSISTOR	2SK1299S	C551	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
Q107	8-729-403-27	TRANSISTOR	XN4401	C552	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
Q108	8-729-120-28	TRANSISTOR	2SC1623-L5L6	C553	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
Q109	8-729-905-23	TRANSISTOR	2SA1576-R	C554	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
< RESISTOR >				C555	1-162-587-11	CERAMIC CHIP 0.039uF 10% 25V	
R101	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	C556	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
R102	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	C557	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
R103	1-218-740-11	METAL CHIP	100K 0.50% 1/16W	C558	1-162-638-11	CERAMIC CHIP 1uF 16V	
R104	1-218-708-11	METAL CHIP	4.7K 0.50% 1/16W	C562	1-162-638-11	CERAMIC CHIP 1uF 16V	
R105	1-216-797-11	METAL CHIP	10 5% 1/16W	C563	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
R106	1-216-833-11	METAL CHIP	10K 5% 1/16W	C566	1-162-638-11	CERAMIC CHIP 1uF 16V	
R107	1-216-845-11	METAL CHIP	100K 5% 1/16W	C569	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
R108	1-218-883-11	METAL CHIP	33K 0.50% 1/16W	< CONNECTOR >			
R109	1-218-883-11	METAL CHIP	33K 0.50% 1/16W	CN551	1-566-537-11	CONNECTOR, FPC (NON ZIP) 5P	
R110	1-216-849-11	METAL CHIP	220K 5% 1/16W	CN552	1-580-056-21	PIN, CONNECTOR 3P	
R111	1-216-845-11	METAL CHIP	100K 5% 1/16W	< DIODE >			
R112	1-216-833-11	METAL CHIP	10K 5% 1/16W	D552	8-719-404-46	DIODE MA110	
R113	1-216-845-11	METAL CHIP	100K 5% 1/16W	< IC >			
R114	1-216-804-11	METAL CHIP	39 5% 1/16W	IC551	8-759-822-37	IC LA7293M-TE-L	
R115	1-216-845-11	METAL CHIP	100K 5% 1/16W	< JACK >			
R116	1-216-836-11	METAL CHIP	18K 0.5% 1/16W	J551	1-568-027-11	JACK, SMALL TYPE 1P (MIC)	
R117	1-216-837-11	METAL CHIP	22K 5% 1/16W	< COIL >			
R118	1-216-833-11	METAL CHIP	10K 5% 1/16W	L571	1-410-192-51	INDUCTOR CHIP 1uH	
R119	1-216-838-11	METAL CHIP	27K 5% 1/16W	L572	1-410-192-51	INDUCTOR CHIP 1uH	
R120	1-216-845-11	METAL CHIP	100K 5% 1/16W	< TRANSISTOR >			
R121	1-218-708-11	METAL CHIP	4.7K 0.50% 1/16W	Q551	8-729-402-55	TRANSISTOR 2SB1218A-R	
R122	1-216-846-11	METAL CHIP	120K 0.5% 1/16W	< RESISTOR >			
R123	1-218-883-11	METAL CHIP	33K 0.50% 1/16W	R551	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R124	1-218-732-11	METAL CHIP	47K 0.50% 1/16W	*****			
R125	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R126	1-216-833-11	METAL CHIP	10K 5% 1/16W				
R127	1-216-833-11	METAL CHIP	10K 5% 1/16W				
R128	1-216-839-11	METAL CHIP	33K 5% 1/16W				
< VARIABLE RESISTOR >							
RV101	1-238-854-11	RES, ADJ, CERMET 2.2K					
RV102	1-238-856-11	RES, ADJ, CERMET 10K					
< TRANSFORMER >							
T101	1-450-974-21	TRANSFORMER, D-D					
T102	1-450-975-21	TRANSFORMER, INVERTER					

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R552	1-216-830-11	METAL CHIP	5.6K 5% 1/16W	C065	1-162-974-11	CERAMIC CHIP	0.01uF 50V
R553	1-216-838-11	METAL CHIP	27K 5% 1/16W	C066	1-162-974-11	CERAMIC CHIP	0.01uF 50V
R554	1-216-838-11	METAL CHIP	27K 5% 1/16W	C067	1-165-128-11	CERAMIC CHIP	0.22uF 16V
R555	1-216-864-11	METAL CHIP	0 5% 1/16W	C068	1-162-949-11	CERAMIC CHIP	47PF 5% 50V
R556	1-216-864-11	METAL CHIP	0 5% 1/16W	C069	1-162-948-11	CERAMIC CHIP	39PF 5% 50V
R558	1-216-831-11	METAL CHIP	6.8K 5% 1/16W	C070	1-162-953-11	CERAMIC CHIP	100PF 5% 50V
R564	1-216-295-00	METAL CHIP	0 5% 1/10W	C072	1-162-943-11	CERAMIC CHIP	15PF 5% 50V
R565	1-216-821-11	METAL CHIP	1K 5% 1/16W	C073	1-162-951-11	CERAMIC CHIP	68PF 5% 50V
R566	1-216-864-11	METAL CHIP	0 5% 1/16W	C074	1-162-956-11	CERAMIC CHIP	180PF 5% 50V
*****				C075	1-162-942-11	CERAMIC CHIP	12PF 5% 50V
* A-7063-316-A VS-95 BOARD, COMPLETE				C077	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
*****				C078	1-162-934-11	CERAMIC CHIP	3PF 0.25PF 50V
(Ref. No 4,000 Series)				C080	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
1-691-471-11 CONNECTOR, TRANSLATION 11P				C081	1-162-944-11	CERAMIC CHIP	18PF 5% 50V
< CAPACITOR >				C082	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C001	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C083	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C002	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	C085	1-162-947-11	CERAMIC CHIP	33PF 5% 50V
C003	1-162-955-11	CERAMIC CHIP	150PF 5% 50V	C086	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C004	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	C091	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C005	1-162-953-11	CERAMIC CHIP	100PF 5% 50V	C092	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C006	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C121	1-162-971-11	CERAMIC CHIP	0.001uF 50V
C009	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C122	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C010	1-135-157-21	TANTALUM CHIP	10uF 20% 6.3V	C123	1-135-181-21	TANTALUM CHIP	4.7uF 20% 6.3V
C011	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C124	1-164-346-11	CERAMIC CHIP	1uF 16V
C012	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C125	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C013	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C126	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C014	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C127	1-164-145-11	CERAMIC CHIP	390PF 5% 50V
C018	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C128	1-162-943-11	CERAMIC CHIP	15PF 5% 50V
C019	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C129	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C020	1-164-633-11	CERAMIC CHIP	0.1uF 10% 25V	C130	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V
C021	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C131	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C022	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C132	1-163-118-00	CERAMIC CHIP	110PF 5% 50V
C023	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C133	1-135-149-21	TANTALUM CHIP	2.2uF 20% 6.3V
C024	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C135	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C025	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V	C136	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C026	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C137	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C027	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C150	1-162-944-11	CERAMIC CHIP	18PF 5% 50V
C028	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C151	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C029	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C156	1-162-948-11	CERAMIC CHIP	39PF 5% 50V
C030	1-135-259-11	TANTAL. CHIP	10uF 20% 6.3V	C159	1-162-946-11	CERAMIC CHIP	27PF 5% 50V
C035	1-135-157-21	TANTALUM CHIP	10uF 20% 6.3V	C161	1-162-953-11	CERAMIC CHIP	100PF 5% 50V
C049	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C167	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C057	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C168	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C058	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C170	1-162-568-11	CERAMIC CHIP	0.33uF 25V
C059	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C171	1-162-638-11	CERAMIC CHIP	1uF 16V
C061	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C173	1-162-974-11	CERAMIC CHIP	0.01uF 50V
C063	1-162-974-11	CERAMIC CHIP	0.01uF 50V	C175	1-128-004-11	ELECT CHIP	10uF 20% 16V
C064	1-162-995-11	CERAMIC CHIP	0.022uF 50V	C176	1-162-974-11	CERAMIC CHIP	0.01uF 50V
				C177	1-162-974-11	CERAMIC CHIP	0.01uF 50V
				C178	1-164-145-11	CERAMIC CHIP	390PF 5% 50V

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C179	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C255	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C180	1-162-947-11	CERAMIC CHIP 33PF 5%	50V	C256	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C181	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V	C257	1-162-949-11	CERAMIC CHIP 47PF 5%	50V
C182	1-162-958-11	CERAMIC CHIP 270PF 5%	50V	C259	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C187	1-162-943-11	CERAMIC CHIP 15PF 5%	50V	C260	1-162-945-11	CERAMIC CHIP 22PF 5%	50V
C188	1-162-958-11	CERAMIC CHIP 270PF 5%	50V	C261	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C189	1-164-362-11	CERAMIC CHIP 470PF 5%	50V	C262	1-162-954-11	CERAMIC CHIP 120PF 5%	50V
C192	1-162-958-11	CERAMIC CHIP 270PF 5%	50V	C263	1-162-951-11	CERAMIC CHIP 68PF 5%	50V
C193	1-162-953-11	CERAMIC CHIP 100PF 5%	50V	C264	1-162-950-11	CERAMIC CHIP 56PF 5%	50V
C194	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C265	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C199	1-135-149-21	TANTALUM CHIP 2.2uF 20%	6.3V	C266	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C205	1-162-949-11	CERAMIC CHIP 47PF 5%	50V	C267	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C206	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C268	1-162-955-11	CERAMIC CHIP 150PF 5%	50V
C207	1-162-952-11	CERAMIC CHIP 82PF 5%	50V	C269	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C208	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V	C270	1-162-947-11	CERAMIC CHIP 33PF 5%	50V
C209	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C271	1-128-004-11	ELECT CHIP 10uF 20%	16V
C213	1-164-222-11	CERAMIC CHIP 0.22uF	25V	C272	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C214	1-164-005-11	CERAMIC CHIP 0.47uF	25V	C273	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C216	1-128-004-11	ELECT CHIP 10uF 20%	16V	C278	1-162-638-11	CERAMIC CHIP 1uF	16V
C217	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V	C280	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C218	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C281	1-135-146-21	TANTALUM CHIP 0.68uF 20%	25V
C219	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C282	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C220	1-126-246-11	ELECT CHIP 220uF 20%	4V	C283	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C221	1-164-182-11	CERAMIC CHIP 0.0033uF 10%	50V	C284	1-162-969-11	CERAMIC CHIP 0.0068uF 10%	25V
C222	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C285	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C223	1-128-004-11	ELECT CHIP 10uF 20%	16V	C286	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C225	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C288	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C226	1-164-005-11	CERAMIC CHIP 0.47uF	25V	C289	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C227	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C290	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C228	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C291	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C229	1-135-180-21	TANTALUM CHIP 3.3uF 20%	6.3V	C292	1-135-180-21	TANTALUM CHIP 3.3uF 20%	6.3V
C230	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C294	1-162-638-11	CERAMIC CHIP 1uF	16V
C231	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C295	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C232	1-135-180-21	TANTALUM CHIP 3.3uF 20%	6.3V	C296	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C233	1-128-004-11	ELECT CHIP 10uF 20%	16V	C297	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C234	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C298	1-162-947-11	CERAMIC CHIP 33PF 5%	50V
C235	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C299	1-162-949-11	CERAMIC CHIP 47PF 5%	50V
C236	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C300	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C237	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C301	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C238	1-164-005-11	CERAMIC CHIP 0.47uF	25V	C302	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C239	1-162-954-11	CERAMIC CHIP 120PF 5%	50V	C303	1-135-149-21	TANTALUM CHIP 2.2uF 20%	6.3V
C240	1-162-959-11	CERAMIC CHIP 330PF 5%	50V	C304	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C241	1-126-607-11	ELECT CHIP 47uF 20%	4V	C305	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C242	1-162-960-11	CERAMIC CHIP 220PF 10%	50V	C306	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C245	1-163-035-00	CERAMIC CHIP 0.047uF	50V	C307	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C246	1-135-157-21	TANTALUM CHIP 10uF 20%	6.3V	C401	1-164-346-11	CERAMIC CHIP 1uF	16V
C247	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C402	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C248	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C404	1-164-346-11	CERAMIC CHIP 1uF	16V
C249	1-162-959-11	CERAMIC CHIP 330PF 5%	50V	C406	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C250	1-164-145-11	CERAMIC CHIP 390PF 5%	50V	C407	1-162-995-11	CERAMIC CHIP 0.022uF	50V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C408	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C463	1-135-215-21	TANTAL. CHIP 6.8uF 20%	16V
C409	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V	C464	1-135-180-21	TANTALUM CHIP 3.3uF 20%	6.3V
C412	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V	C465	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C413	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C466	1-164-298-11	CERAMIC CHIP 0.15uF 10%	25V
C414	1-162-919-11	CERAMIC CHIP 22PF 5%	50V	C467	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C415	1-165-128-11	CERAMIC CHIP 0.22uF	16V	C468	1-164-298-11	CERAMIC CHIP 0.15uF 10%	25V
C416	1-162-916-11	CERAMIC CHIP 12PF 5%	50V	C469	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V
C417	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C470	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V
C418	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C471	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C420	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C472	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C421	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C473	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V
C422	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C474	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V
C423	1-164-361-11	CERAMIC CHIP 0.047uF	16V	C475	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C424	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C476	1-135-179-21	TANTAL. CHIP 2.2uF 20%	16V
C425	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C477	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C426	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V	C478	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C427	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C481	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C428	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C482	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C429	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C483	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C430	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C484	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C431	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V	C485	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C432	1-164-173-11	CERAMIC CHIP 0.0039uF 10%	50V	C486	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C433	1-162-918-11	CERAMIC CHIP 18PF 5%	50V	C487	1-128-530-11	ELECT CHIP 33uF 20%	10V
C434	1-162-917-11	CERAMIC CHIP 15PF 5%	50V	< FILTER, CERAMIC >			
C435	1-162-974-11	CERAMIC CHIP 0.01uF	50V	CF151	1-579-371-11	FILTER, CERAMIC	
C436	1-162-974-11	CERAMIC CHIP 0.01uF	50V	< CONNECTOR >			
C437	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN002	1-569-775-21	PIN, CONNECTOR 5P	
C438	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN101	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P	
C439	1-162-907-11	CERAMIC CHIP 2PF 0.25PF	50V	CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
C440	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	CN401	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
C441	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	CN403	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P	
C442	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN404	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P	
C444	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN406	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P	
C445	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	* CN407	1-580-055-21	PIN, CONNECTOR 2P	
C446	1-162-995-11	CERAMIC CHIP 0.022uF	50V	< DIODE >			
C447	1-162-974-11	CERAMIC CHIP 0.01uF	50V	D001	8-719-800-76	DIODE 1SS226	
C449	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D121	8-719-027-50	DIODE MA142WK	
C450	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D152	8-719-027-48	DIODE MA142WA	
C451	1-163-038-00	CERAMIC CHIP 0.1uF	25V	D159	8-719-027-50	DIODE MA142WK	
C452	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	D160	8-719-027-50	DIODE MA142WK	
C453	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	D161	8-719-404-46	DIODE MA110	
C454	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	D162	8-719-027-50	DIODE MA142WK	
C455	1-162-969-11	CERAMIC CHIP 0.0068uF 10%	25V	D163	8-719-027-50	DIODE MA142WK	
C456	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V	D401	8-719-421-27	DIODE MA728	
C457	1-162-969-11	CERAMIC CHIP 0.0068uF 10%	25V	D402	8-719-027-50	DIODE MA142WK	
C458	1-164-360-11	CERAMIC CHIP 0.1uF	16V	D403	8-719-404-46	DIODE MA110	
C459	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V				
C460	1-162-974-11	CERAMIC CHIP 0.01uF	50V				
C461	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V				
C462	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V				

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< FILTER >				L162	1-412-280-31	INDUCTOR 330uH	
FL121	1-236-188-11	FILTER, BAND PASS		L163	1-410-167-41	INDUCTOR CHIP 820uH	
FL152	1-236-849-21	FILTER, BAND PASS		L164	1-410-657-21	INDUCTOR CHIP 180uH	
FL153	1-236-186-11	FILTER, BAND PASS		L169	1-410-392-11	INDUCTOR CHIP 82uH	
FL154	1-239-055-21	FILTER, LOW PASS (CCD. PAL. Y)		L170	1-410-381-11	INDUCTOR CHIP 10uH	
FL155	1-236-848-21	FILTER, LOW PASS		L171	1-410-384-31	INDUCTOR CHIP 18uH	
FL401	1-406-452-11	COIL, OSC		L175	1-410-393-11	INDUCTOR CHIP 100uH	
< IC >				L176	1-410-656-11	INDUCTOR CHIP 150uH	
IC001	8-752-033-38	IC CXA1202R		L177	1-412-058-11	INDUCTOR CHIP 10uH	
IC003	8-752-053-21	IC CXA1211M		L178	1-412-062-11	INDUCTOR CHIP 47uH	
IC121	8-759-605-61	IC CXA1203N		L179	1-410-379-31	INDUCTOR CHIP 6.8uH	
IC151	8-752-065-54	IC CXA1207AR		L180	1-410-393-11	INDUCTOR CHIP 100uH	
IC152	8-752-065-56	IC CXA1208R		L181	1-410-393-11	INDUCTOR CHIP 100uH	
IC154	8-752-333-24	IC CXL1506M		L182	1-410-655-31	INDUCTOR CHIP 120uH	
IC155	8-752-053-21	IC CXA1211M		L185	1-412-058-11	INDUCTOR CHIP 10uH	
IC156	8-759-055-82	IC M62353GP		L186	1-412-052-21	INDUCTOR CHIP 1uH	
IC158	8-759-055-82	IC M62353GP		L401	1-412-056-11	INDUCTOR CHIP 4.7uH	
IC159	8-759-636-33	IC CXA1452N		L402	1-412-058-11	INDUCTOR CHIP 10uH	
IC401	8-759-056-84	IC S-8420AF		L403	1-412-062-11	INDUCTOR CHIP 47uH	
IC402	8-752-838-20	IC CXP80624-428R		L404	1-412-058-11	INDUCTOR CHIP 10uH	
IC403	8-759-096-79	IC uPD75316GF-318-3B9		L405	1-412-058-11	INDUCTOR CHIP 10uH	
IC404	8-759-059-42	IC CXA1481AR		L406	1-412-058-11	INDUCTOR CHIP 10uH	
IC405	8-759-044-78	IC AK6420F		L407	1-412-052-21	INDUCTOR CHIP 1uH	
IC406	8-759-081-96	IC uPD6456GS-620		< LINK, IC >			
IC407	8-759-145-63	IC uPD7564G-540		△PS401	1-576-122-21	LINK, IC (CCP2E10 0.4A)	
IC408	8-759-057-60	IC MCD004BM		△PS402	1-576-123-21	LINK, IC (CCP2E20 0.8A)	
IC409	8-759-999-02	IC TL1596CDSB		< TRANSISTOR >			
IC410	8-759-062-02	IC MPC1720VM		△Q001	8-729-216-22	TRANSISTOR 2SA1162-G	
< COIL >				Q003	8-729-402-55	TRANSISTOR 2SB1218A-R	
L001	1-410-381-11	INDUCTOR CHIP 10uH		Q008	8-729-402-32	TRANSISTOR 2SD1819A-R	
L002	1-412-066-21	INDUCTOR CHIP 220uH		Q010	8-729-403-35	TRANSISTOR UN5113	
L003	1-412-066-21	INDUCTOR CHIP 220uH		△Q019	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
L005	1-412-060-11	INDUCTOR CHIP 22uH		△Q020	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
L007	1-412-058-11	INDUCTOR CHIP 10uH		Q021	8-729-905-23	TRANSISTOR 2SA1576-R	
L008	1-410-658-31	INDUCTOR CHIP 220uH		Q022	8-729-402-55	TRANSISTOR 2SB1218A-R	
L009	1-410-380-31	INDUCTOR CHIP 8.2uH		Q024	8-729-102-07	TRANSISTOR 2SC2223-F13	
L010	1-410-655-31	INDUCTOR CHIP 120uH		Q025	8-729-014-16	TRANSISTOR RN2302-TE85L	
L011	1-412-280-31	INDUCTOR 330uH		Q026	8-729-402-32	TRANSISTOR 2SD1819A-R	
L012	1-410-387-11	INDUCTOR CHIP 33uH		Q121	8-729-403-35	TRANSISTOR UN5113	
L013	1-410-657-21	INDUCTOR CHIP 180uH		Q123	8-729-402-42	TRANSISTOR UN5213	
L015	1-410-381-11	INDUCTOR CHIP 10uH		Q124	8-729-403-35	TRANSISTOR UN5113	
L121	1-410-381-11	INDUCTOR CHIP 10uH		Q125	8-729-117-73	TRANSISTOR 2SC4178-F14	
L150	1-410-384-31	INDUCTOR CHIP 18uH		Q126	8-729-402-32	TRANSISTOR 2SD1819A-R	
L152	1-410-385-11	INDUCTOR CHIP 22uH		Q151	8-729-101-07	TRANSISTOR 2SB798-DL	
L154	1-410-390-11	INDUCTOR CHIP 56uH		Q152	8-729-402-32	TRANSISTOR 2SD1819A-R	
L155	1-410-390-11	INDUCTOR CHIP 56uH		Q154	8-729-402-32	TRANSISTOR 2SD1819A-R	
L160	1-412-058-11	INDUCTOR CHIP 10uH		Q158	8-729-402-32	TRANSISTOR 2SD1819A-R	
L161	1-410-385-11	INDUCTOR CHIP 22uH					

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q160	8-729-403-35	TRANSISTOR UN5113		< RESISTOR >			
Q161	8-729-402-32	TRANSISTOR 2SD1819A-R		R001	1-216-801-11	METAL CHIP 22 5% 1/16W	
Q162	8-729-403-35	TRANSISTOR UN5113		R002	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q166	8-729-402-55	TRANSISTOR 2SB1218A-R		R004	1-216-815-11	METAL CHIP 330 5% 1/16W	
Q168	8-729-403-35	TRANSISTOR UN5113		R005	1-216-817-11	METAL CHIP 470 5% 1/16W	
Q170	8-729-420-20	TRANSISTOR XN4312		R006	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q171	8-729-117-73	TRANSISTOR 2SC4178-F14		R007	1-216-839-11	METAL CHIP 33K 5% 1/16W	
Q174	8-729-402-32	TRANSISTOR 2SD1819A-R		R012	1-216-835-11	METAL CHIP 15K 5% 1/16W	
Q175	8-729-402-32	TRANSISTOR 2SD1819A-R		R013	1-216-841-11	METAL CHIP 47K 5% 1/16W	
Q176	8-729-402-32	TRANSISTOR 2SD1819A-R		R016	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q177	8-729-402-55	TRANSISTOR 2SB1218A-R		R017	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q178	8-729-402-55	TRANSISTOR 2SB1218A-R		R020	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
Q180	8-729-422-54	TRANSISTOR XN4215		R021	1-216-836-11	METAL CHIP 18K 5% 1/16W	
Q182	8-729-402-32	TRANSISTOR 2SD1819A-R		R022	1-216-840-11	METAL CHIP 39K 5% 1/16W	
Q183	8-729-420-53	TRANSISTOR UN5115		R023	1-216-838-11	METAL CHIP 27K 5% 1/16W	
Q184	8-729-402-32	TRANSISTOR 2SD1819A-R		R024	1-216-838-11	METAL CHIP 27K 5% 1/16W	
Q189	8-729-402-32	TRANSISTOR 2SD1819A-R		R025	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
Q191	8-729-402-32	TRANSISTOR 2SD1819A-R		R026	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
Q192	8-729-402-32	TRANSISTOR 2SD1819A-R		R027	1-216-841-11	METAL CHIP 47K 5% 1/16W	
Q194	8-729-402-32	TRANSISTOR 2SD1819A-R		R028	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q195	8-729-402-55	TRANSISTOR 2SB1218A-R		R029	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
Q196	8-729-403-35	TRANSISTOR UN5113		R030	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q199	8-729-807-87	TRANSISTOR 2SB1295-UL6		R031	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
Q200	8-729-013-88	TRANSISTOR RN1302-TE85L		R033	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
Q203	8-729-402-55	TRANSISTOR 2SB1218A-R		R049	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
Q204	8-729-402-32	TRANSISTOR 2SD1819A-R		R050	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
Q205	8-729-402-42	TRANSISTOR UN5213		R051	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
Q207	8-729-403-35	TRANSISTOR UN5113		R052	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
Q208	8-729-013-88	TRANSISTOR RN1302-TE85L		R054	1-216-817-11	METAL CHIP 470 5% 1/16W	
Q210	8-729-402-42	TRANSISTOR UN5213		R055	1-216-820-11	METAL CHIP 820 5% 1/16W	
Q212	8-729-402-55	TRANSISTOR 2SB1218A-R		R056	1-216-864-11	METAL CHIP 0 5% 1/16W	
Q214	8-729-420-12	TRANSISTOR XN4213		R057	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q219	8-729-810-13	TRANSISTOR 2SA1677		R058	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q220	8-729-402-45	TRANSISTOR UN5212		R060	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
Q221	8-729-420-12	TRANSISTOR XN4213		R061	1-216-821-11	METAL CHIP 1K 5% 1/16W	
Q222	8-729-402-32	TRANSISTOR 2SD1819A-R		R062	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q223	8-729-402-42	TRANSISTOR UN5213		R063	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
Q229	8-729-402-55	TRANSISTOR 2SB1218A-R		R064	1-216-817-11	METAL CHIP 470 5% 1/16W	
Q230	8-729-402-32	TRANSISTOR 2SD1819A-R		R065	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
Q231	8-729-402-55	TRANSISTOR 2SB1218A-R		R066	1-216-809-11	METAL CHIP 100 5% 1/16W	
Q232	8-729-402-32	TRANSISTOR 2SD1819A-R		R067	1-216-836-11	METAL CHIP 18K 5% 1/16W	
Q233	8-729-402-32	TRANSISTOR 2SD1819A-R		R070	1-216-834-11	METAL CHIP 12K 5% 1/16W	
Q234	8-729-402-55	TRANSISTOR 2SB1218A-R		R071	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
Q236	8-729-420-56	TRANSISTOR UN511E		R072	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
Q237	8-729-425-50	TRANSISTOR 2SB1218A-R		R076	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
Q401	8-729-402-48	TRANSISTOR UN521E		R078	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
Q403	8-729-403-35	TRANSISTOR UN5113		R079	1-216-833-11	METAL CHIP 10K 5% 1/16W	
Q405	8-729-013-88	TRANSISTOR RN1302-TE85L		R081	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
Q409	8-729-017-67	TRANSISTOR 2SB1574		R082	1-216-804-11	METAL CHIP 39 5% 1/16W	
				R083	1-216-821-11	METAL CHIP 1K 5% 1/16W	

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Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R085	1-216-821-11	METAL CHIP	1K	5%	1/16W	R191	1-216-864-11	METAL CHIP	0	5%	1/16W
R086	1-216-817-11	METAL CHIP	470	5%	1/16W	R192	1-216-833-11	METAL CHIP	10K	5%	1/16W
R087	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R193	1-216-841-11	METAL CHIP	47K	5%	1/16W
R088	1-216-808-11	METAL CHIP	82	5%	1/16W	R194	1-216-833-11	METAL CHIP	10K	5%	1/16W
R090	1-216-836-11	METAL CHIP	18K	5%	1/16W	R195	1-216-819-21	METAL CHIP	680	5%	1/16W
R097	1-216-821-11	METAL CHIP	1K	5%	1/16W	R196	1-216-815-11	METAL CHIP	330	5%	1/16W
R122	1-216-833-11	METAL CHIP	10K	5%	1/16W	R198	1-216-817-11	METAL CHIP	470	5%	1/16W
R123	1-216-845-11	METAL CHIP	100K	5%	1/16W	R199	1-216-816-11	METAL CHIP	390	5%	1/16W
R124	1-216-845-11	METAL CHIP	100K	5%	1/16W	R200	1-216-821-11	METAL CHIP	1K	5%	1/16W
R125	1-216-845-11	METAL CHIP	100K	5%	1/16W	R201	1-216-815-11	METAL CHIP	330	5%	1/16W
R126	1-216-845-11	METAL CHIP	100K	5%	1/16W	R202	1-216-840-11	METAL CHIP	39K	5%	1/16W
R127	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R203	1-216-837-11	METAL CHIP	22K	5%	1/16W
R129	1-216-845-11	METAL CHIP	100K	5%	1/16W	R204	1-216-821-11	METAL CHIP	1K	5%	1/16W
R130	1-216-833-11	METAL CHIP	10K	5%	1/16W	R205	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R131	1-216-841-11	METAL CHIP	47K	5%	1/16W	R206	1-216-813-11	METAL CHIP	220	5%	1/16W
R132	1-216-833-11	METAL CHIP	10K	5%	1/16W	R208	1-216-864-11	METAL CHIP	0	5%	1/16W
R133	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R134	1-216-833-11	METAL CHIP	10K	5%	1/16W	R213	1-216-835-11	METAL CHIP	15K	5%	1/16W
R135	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R216	1-216-837-11	METAL CHIP	22K	5%	1/16W
R136	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R217	1-216-837-11	METAL CHIP	22K	5%	1/16W
R137	1-216-821-11	METAL CHIP	1K	5%	1/16W	R218	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R138	1-216-839-11	METAL CHIP	33K	5%	1/16W	R219	1-216-821-11	METAL CHIP	1K	5%	1/16W
R139	1-216-817-11	METAL CHIP	470	5%	1/16W	R220	1-216-811-11	METAL CHIP	150	5%	1/16W
R140	1-216-833-11	METAL CHIP	10K	5%	1/16W	R221	1-216-864-11	METAL CHIP	0	5%	1/16W
R141	1-216-821-11	METAL CHIP	1K	5%	1/16W	R222	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R142	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R223	1-216-835-11	METAL CHIP	15K	5%	1/16W
R143	1-216-839-11	METAL CHIP	33K	5%	1/16W	R224	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R144	1-216-817-11	METAL CHIP	470	5%	1/16W	R226	1-216-819-11	METAL CHIP	680	5%	1/16W
R145	1-216-837-11	METAL CHIP	22K	5%	1/16W	R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R146	1-216-821-11	METAL CHIP	1K	5%	1/16W	R230	1-216-807-11	METAL CHIP	68	5%	1/16W
R150	1-216-864-11	METAL CHIP	0	5%	1/16W	R231	1-216-821-11	METAL CHIP	1K	5%	1/16W
R151	1-216-296-00	METAL CHIP	0	5%	1/8W	R232	1-216-833-11	METAL CHIP	10K	5%	1/16W
R152	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	R238	1-216-821-11	METAL CHIP	1K	5%	1/16W
R153	1-216-304-11	METAL CHIP	3.3	5%	1/10W	R234	1-216-864-11	METAL CHIP	0	5%	1/16W
R154	1-216-820-11	METAL CHIP	820	5%	1/16W	R242	1-216-818-11	METAL CHIP	560	5%	1/16W
R155	1-216-836-11	METAL CHIP	18K	5%	1/16W	R243	1-216-809-11	METAL CHIP	100	5%	1/16W
R156	1-216-296-00	METAL CHIP	0	5%	1/8W	R244	1-216-835-11	METAL CHIP	15K	5%	1/16W
R158	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R245	1-216-817-11	METAL CHIP	470	5%	1/16W
R160	1-216-819-11	METAL CHIP	680	5%	1/16W	R246	1-216-817-11	METAL CHIP	470	5%	1/16W
R161	1-216-809-11	METAL CHIP	100	5%	1/16W	R247	1-216-296-00	METAL CHIP	0	5%	1/8W
R164	1-216-811-11	METAL CHIP	150	5%	1/16W	R248	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R167	1-216-820-11	METAL CHIP	820	5%	1/16W	R250	1-216-810-11	METAL CHIP	120	5%	1/16W
R168	1-216-820-11	METAL CHIP	820	5%	1/16W	R251	1-216-806-11	METAL CHIP	56	5%	1/16W
R170	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	R253	1-216-821-11	METAL CHIP	1K	5%	1/16W
R175	1-216-810-11	METAL CHIP	120	5%	1/16W	R254	1-216-818-11	METAL CHIP	560	5%	1/16W
R177	1-216-819-11	METAL CHIP	680	5%	1/16W	R255	1-216-833-11	METAL CHIP	10K	5%	1/16W
R178	1-216-817-11	METAL CHIP	470	5%	1/16W	R256	1-216-864-11	METAL CHIP	0	5%	1/16W
R179	1-216-820-11	METAL CHIP	820	5%	1/16W	R257	1-216-818-11	METAL CHIP	560	5%	1/16W
R189	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R258	1-216-821-11	METAL CHIP	1K	5%	1/16W
R190	1-216-837-11	METAL CHIP	22K	5%	1/16W	R259	1-216-816-11	METAL CHIP	390	5%	1/16W

Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
R260	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W		R335	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R263	1-216-864-11	METAL CHIP	0	5%	1/16W		R337	1-216-864-11	METAL CHIP	0	5%	1/16W	
R266	1-216-864-11	METAL CHIP	0	5%	1/16W		R339	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R267	1-216-864-11	METAL CHIP	0	5%	1/16W		R341	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R270	1-216-864-11	METAL CHIP	0	5%	1/16W		R342	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	
R271	1-216-841-11	METAL CHIP	47K	5%	1/16W		R343	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R272	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W		R344	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R276	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W		R345	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	
R277	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W		R346	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R278	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W		R347	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W	
R279	1-216-818-11	METAL CHIP	560	5%	1/16W		R349	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R280	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W		R350	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R281	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W		R352	1-216-864-11	METAL CHIP	0	5%	1/16W	
R282	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W		R353	1-216-864-11	METAL CHIP	0	5%	1/16W	
R283	1-216-821-11	METAL CHIP	1K	5%	1/16W		R357	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	
R285	1-216-833-11	METAL CHIP	10K	5%	1/16W		R358	1-216-828-11	METAL CHIP	3. 9K	5%	1/16W	
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W		R359	1-216-296-00	METAL CHIP	0	5%	1/8W	
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W		R360	1-216-296-00	METAL CHIP	0	5%	1/8W	
R291	1-216-820-11	METAL CHIP	820	5%	1/16W		R361	1-216-864-11	METAL CHIP	0	5%	1/16W	
R293	1-216-807-11	METAL CHIP	68	5%	1/16W		R362	1-216-810-11	METAL CHIP	120	5%	1/16W	
R294	1-216-845-11	METAL CHIP	100K	5%	1/16W		R366	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R295	1-216-853-11	METAL CHIP	470K	5%	1/16W		R371	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R297	1-216-820-11	METAL CHIP	820	5%	1/16W		R373	1-216-817-11	METAL CHIP	470	5%	1/16W	
R298	1-216-820-11	METAL CHIP	820	5%	1/16W		R374	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W	
R299	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W		R375	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R300	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W		R376	1-216-817-11	METAL CHIP	470	5%	1/16W	
R301	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W		R377	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R302	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W		R378	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R303	1-216-846-11	METAL CHIP	120K	5%	1/16W		R379	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R304	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W		R380	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R305	1-216-818-11	METAL CHIP	560	5%	1/16W		R381	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R306	1-216-821-11	METAL CHIP	1K	5%	1/16W		R382	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W		R383	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R308	1-216-819-11	METAL CHIP	680	5%	1/16W		R384	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R309	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W		R385	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R310	1-216-848-11	METAL CHIP	180K	5%	1/16W		R386	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R311	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W		R387	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R312	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W		R388	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R314	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W		R389	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W		R390	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R316	1-216-817-11	METAL CHIP	470	5%	1/16W		R391	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W		R392	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R321	1-216-816-11	METAL CHIP	390	5%	1/16W		R393	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W		R394	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R324	1-216-817-11	METAL CHIP	470	5%	1/16W		R397	1-216-820-11	METAL CHIP	820	5%	1/16W	
R325	1-216-816-11	METAL CHIP	390	5%	1/16W		R398	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	
R329	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W		R401	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	
R331	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W		R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R333	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W		R404	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W	
R334	1-216-833-11	METAL CHIP	10K	5%	1/16W		R405	1-216-821-11	METAL CHIP	1K	5%	1/16W	

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R406	1-216-809-11	METAL CHIP	100 5% 1/16W	R463	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R407	1-216-821-11	METAL CHIP	1K 5% 1/16W	R468	1-216-039-00	METAL CHIP	390 5% 1/10W
R408	1-216-833-11	METAL CHIP	10K 5% 1/16W	R469	1-216-838-11	METAL CHIP	27K 5% 1/16W
R409	1-216-841-11	METAL CHIP	47K 5% 1/16W	R470	1-216-838-11	METAL CHIP	27K 5% 1/16W
R410	1-216-821-11	METAL CHIP	1K 5% 1/16W	R471	1-216-838-11	METAL CHIP	27K 5% 1/16W
R411	1-216-821-11	METAL CHIP	1K 5% 1/16W	R472	1-216-833-11	METAL CHIP	10K 5% 1/16W
R412	1-216-841-11	METAL CHIP	47K 5% 1/16W	R473	1-216-833-11	METAL CHIP	10K 5% 1/16W
R413	1-216-821-11	METAL CHIP	1K 5% 1/16W	R474	1-217-671-11	METAL CHIP	1 5% 1/10W
R414	1-216-821-11	METAL CHIP	1K 5% 1/16W	R475	1-217-671-11	METAL CHIP	1 5% 1/10W
R415	1-216-821-11	METAL CHIP	1K 5% 1/16W	R476	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R416	1-216-821-11	METAL CHIP	1K 5% 1/16W	R479	1-216-845-11	METAL CHIP	100K 5% 1/16W
R417	1-216-833-11	METAL CHIP	10K 5% 1/16W	R480	1-217-671-11	METAL CHIP	1 5% 1/10W
R418	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R481	1-217-671-11	METAL CHIP	1 5% 1/10W
R419	1-216-845-11	METAL CHIP	100K 5% 1/16W	R484	1-216-845-11	METAL CHIP	100K 5% 1/16W
R420	1-216-856-11	METAL CHIP	820K 5% 1/16W	R485	1-216-845-11	METAL CHIP	100K 5% 1/16W
R421	1-216-851-11	METAL CHIP	330K 5% 1/16W	R487	1-216-864-11	METAL CHIP	0 5% 1/16W
R422	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R488	1-216-809-11	METAL CHIP	100 5% 1/16W
R423	1-216-837-11	METAL CHIP	22K 5% 1/16W	R489	1-216-831-11	METAL CHIP	6.8K 5% 1/16W
R424	1-216-845-11	METAL CHIP	100K 5% 1/16W	R490	1-216-833-11	METAL CHIP	10K 5% 1/16W
R425	1-216-849-11	METAL CHIP	220K 5% 1/16W	R491	1-216-296-00	METAL CHIP	0 5% 1/8W
R426	1-216-856-11	METAL CHIP	820K 5% 1/16W	R492	1-216-864-11	METAL CHIP	0 5% 1/16W
R427	1-216-833-11	METAL CHIP	10K 5% 1/16W	R493	1-216-864-11	METAL CHIP	0 5% 1/16W
R428	1-216-833-11	METAL CHIP	10K 5% 1/16W	< THERMISTOR >			
R429	1-216-821-11	METAL CHIP	1K 5% 1/16W	R073	1-809-358-21	THERMISTOR, NTC (2125) 500	
R430	1-216-851-11	METAL CHIP	330K 5% 1/16W	R113	1-809-358-21	THERMISTOR, NTC (2125) 500	
R431	1-216-841-11	METAL CHIP	47K 5% 1/16W	< NETWORK, RES >			
R432	1-216-833-11	METAL CHIP	10K 5% 1/16W	RB401	1-236-442-11	NETWORK, RES 330K	
R433	1-216-821-11	METAL CHIP	1K 5% 1/16W	RB402	1-236-907-11	NETWORK, RES (CHIP TYPE) 100K	
R435	1-216-821-11	METAL CHIP	1K 5% 1/16W	RB403	1-236-907-11	NETWORK, RES (CHIP TYPE) 100K	
R436	1-216-864-11	METAL CHIP	0 5% 1/16W	RB404	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
R437	1-216-817-11	METAL CHIP	470 5% 1/16W	RB405	1-236-436-11	NETWORK, RES 100K	
R438	1-216-841-11	METAL CHIP	47K 5% 1/16W	RB406	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
R439	1-216-864-11	METAL CHIP	0 5% 1/16W	RB407	1-236-907-11	NETWORK, RES (CHIP TYPE) 100K	
R441	1-216-864-11	METAL CHIP	0 5% 1/16W	RB408	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
R442	1-216-864-11	METAL CHIP	0 5% 1/16W	RB409	1-236-904-11	NETWORK, RES (CHIP TYPE) 1.0K	
R443	1-216-845-11	METAL CHIP	100K 5% 1/16W	RB410	1-236-412-11	NETWORK, RES 1.0K	
R445	1-216-837-11	METAL CHIP	22K 5% 1/16W	RB411	1-236-424-11	NETWORK, RES 10K	
R447	1-216-864-11	METAL CHIP	0 5% 1/16W	RB414	1-236-904-11	NETWORK, RES (CHIP TYPE) 1.0K	
R448	1-216-809-11	METAL CHIP	100 5% 1/16W	RB416	1-236-412-11	NETWORK, RES 1.0K	
R449	1-216-845-11	METAL CHIP	100K 5% 1/16W	RB418	1-236-408-11	NETWORK, RES 470	
R450	1-216-833-11	METAL CHIP	10K 5% 1/16W	RB419	1-236-412-11	NETWORK, RES 1.0K	
R451	1-216-841-11	METAL CHIP	47K 5% 1/16W	RB420	1-236-904-11	NETWORK, RES (CHIP TYPE) 1.0K	
R452	1-216-833-11	METAL CHIP	10K 5% 1/16W	RB421	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
R453	1-216-841-11	METAL CHIP	47K 5% 1/16W	RB422	1-236-424-11	NETWORK, RES 10K	
R454	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	RB423	1-236-424-11	NETWORK, RES 10K	
R456	1-216-833-11	METAL CHIP	10K 5% 1/16W	RB424	1-236-424-11	NETWORK, RES 10K	
R457	1-216-837-11	METAL CHIP	22K 5% 1/16W	RB425	1-236-424-11	NETWORK, RES 10K	
R460	1-216-864-11	METAL CHIP	0 5% 1/16W				
R461	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R462	1-216-809-11	METAL CHIP	100 5% 1/16W				

SECTION 7

CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 80.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Stabilized power supply
- Vectorscope
- Adjusting driver
- Color monitor
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part) ^{Note 1}	J-6082-053-B	
J-6	Extension cord (10P, 1 mm)	J-6082-064-A	For extension of JK-91 board
J-7	Extension cord (20P, 0.8 mm)	J-6082-196-A	For extension of CN-65 board (Cabinet (R)) (For the video and the camera section adjustment)
			For extension of AU-138 board (During the repair of AU-138 board)
J-8	Extension cord (16P, 0.8 mm)	J-6082-136-A	For the extension of the lens block (During the repair of the camera section)
J-9	Relay board (21P, 0.5 mm) ^{Note 2}	J-6082-176-A	For the extension of the lens block (During the repair of the camera section)
J-10	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-11	Extension cord (42P, 0.8 mm)	J-6082-195-A	For the extension of DD-48 board (During the repair of the video section)
J-12	Siemens star	J-6080-875-A	For flange back check
J-13	Extension cord (20P, 0.5 mm) ^{Note 2}	J-6082-138-A	For extension between the lens block (FPC) and VC-122 board (CN851) (During the repair of the camera section)
J-14	Extension board (30P, 0.8 mm)	J-6082-167-A	For the extension of VS-95 board (For the mecha deck check)
J-15	Extension cord (6P, 1.5 mm)	J-6082-152-A	For extension (6P, 1.5 mm) between the main body (CN102 of the VS-95 board) and the viewfinder (CN902 of the CL-29 board)
J-16	Extension cord (10P, 0.8 mm)	J-6082-150-A	For extension (10P, 0.8 mm) between the CL-29 board (CN901) and the IV-10 board (CN101)
J-17	Measuring pin for viewfinder section	J-6082-151-A	Almost all the points to be measured when adjusting the viewfinder are concentrated in CN904 of the CL-29 board

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-122 board (CN851).

Note 3: The back light (fluorescent tube) is driven by a 600 Vp-p, 16 kHz AC power supply. Therefore, be careful not to touch the back light holder as you may receive an electric shock.

Note 4: Pay special attention that damages by static electricity do not occur when replacing the LCD unit.

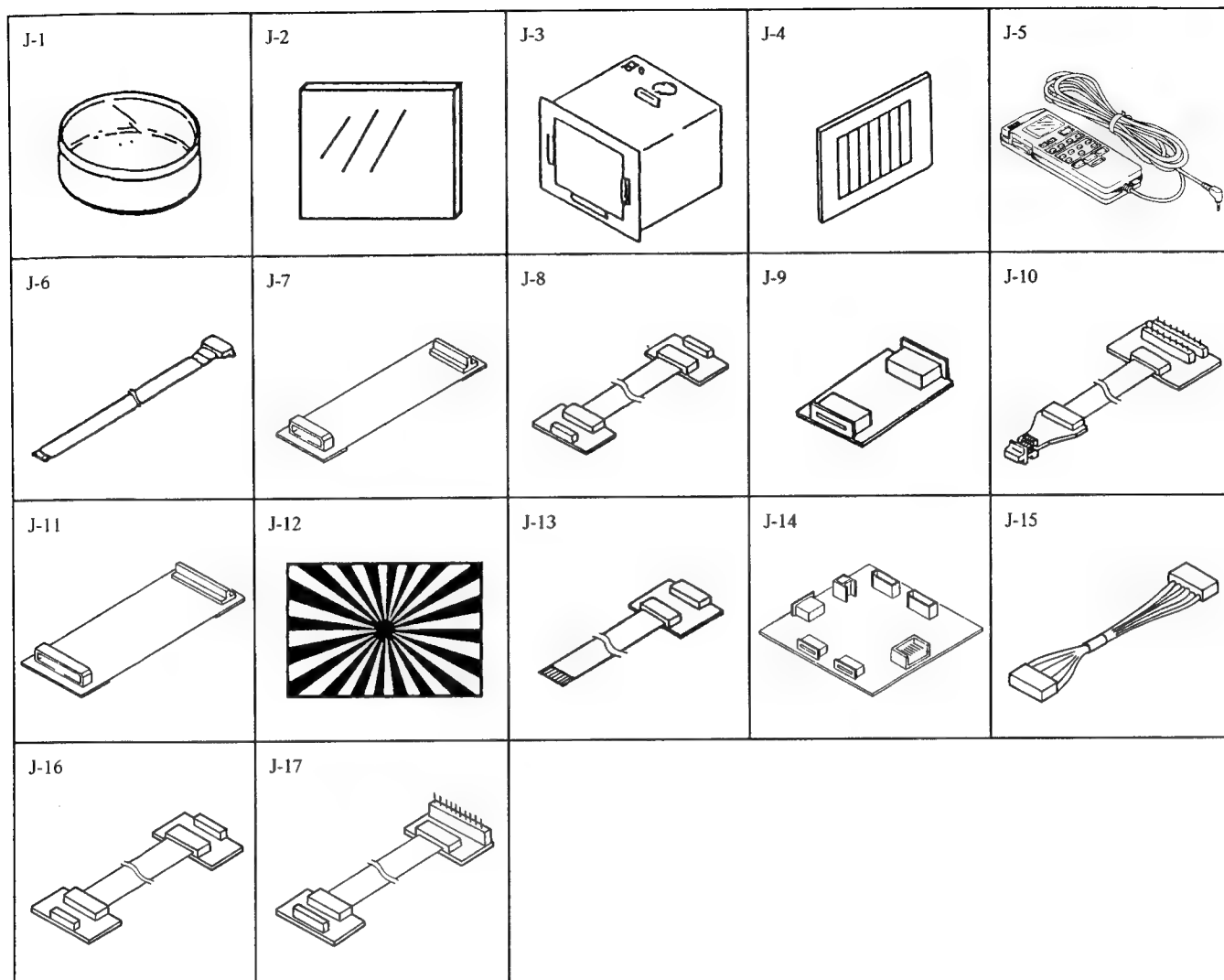


Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "2. Disassembly".

- 1) Connect the equipments for adjustment as shown in Fig. 7-3.
- 2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-95 board CN102.

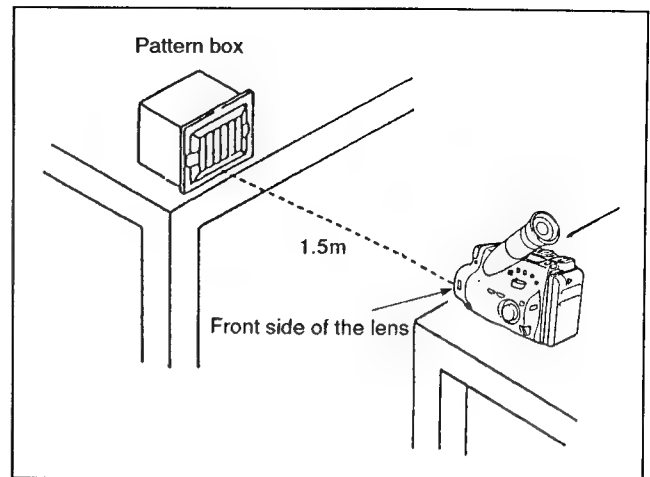


Fig. 7-2.

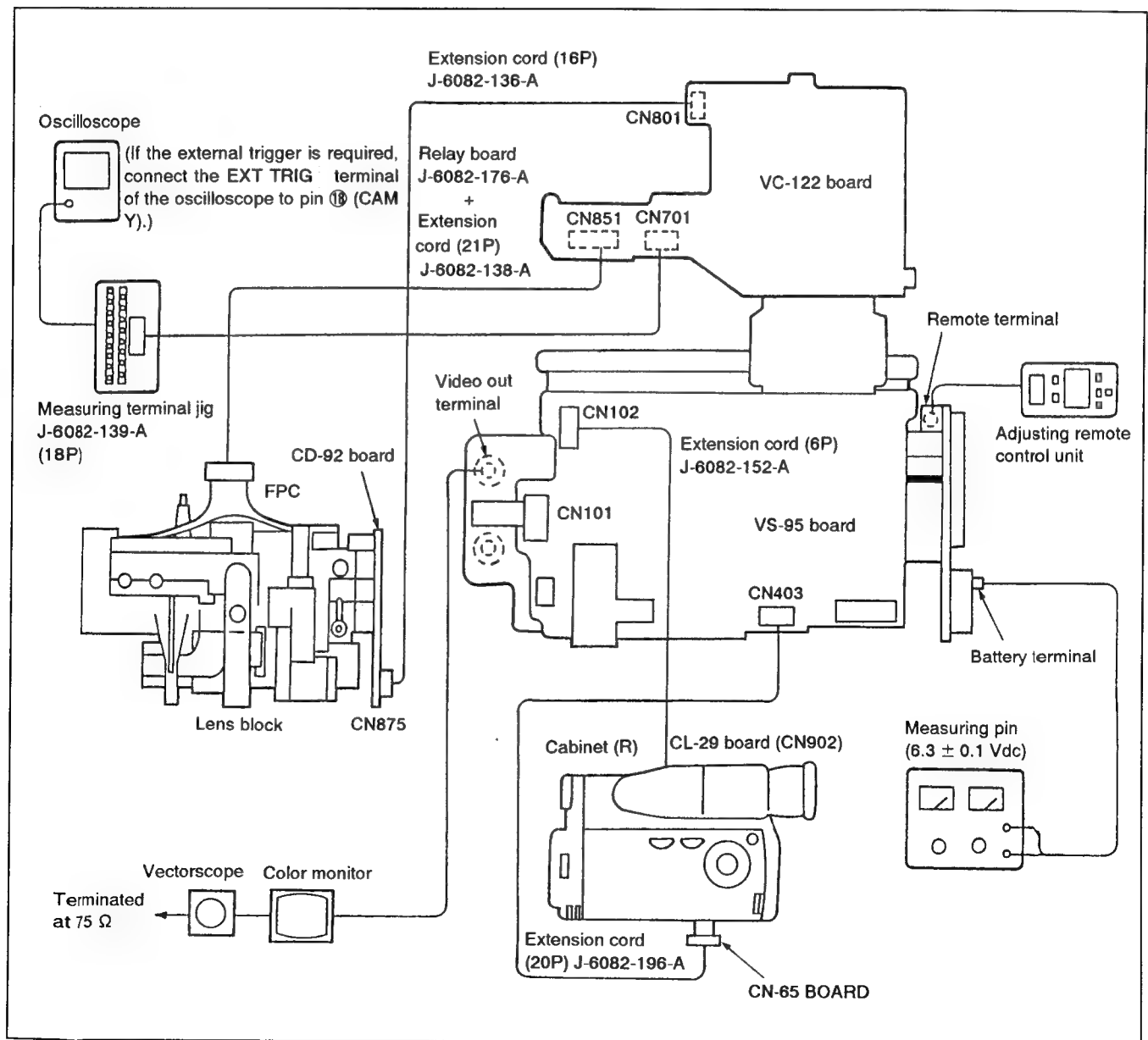


Fig. 7-3.

3. Power Supply Voltage Check (CL-29 Board)

Mode	E-E (VTR POWER ON)
Measuring Instrument	Digital voltmeter
-3V check	
Measurement Point	Pin ⑥ of CN904 (-3V)
Specified Value	-3.11 ± 0.15 Vdc
9V check	
Measurement Point	Pin ④ of CN904 (9V)
Specified Value	8.53 ± 0.4 Vdc

Checking method:

- 1) Check that the UNREG power supply voltage (Pin ① of CN902) is 6.0 ± 0.1 Vdc.
- 2) Check that each power supply voltage satisfies the specified value.

4. LC COM Voltage Check (CL-29 Board)

Mode	E-E (VTR POWER ON)
Measurement Point	Pin ① of CN904 (LC COM)
Measuring Instrument	Digital voltmeter
Specified Value	-2.97 ± 0.15 Vdc

Checking method:

- 1) Check that the UNREG power supply voltage (Pin ① of CN902) is 6.0 ± 0.1 Vdc.
- 2) Check that the LC COM voltage satisfies the specified value.

5. VCO Adjustment (CL-29 Board)

Mode	E-E (VTR POWER ON)
Signal	Color bar turning off the chroma and burst signals
Measurement Point	Pin ⑩ of CN904 (PCO)
Measuring Instrument	Oscilloscope (DC range)
Adjustment Element	RV905
Specified Value	$A = -5.8 \pm 0.1$ V

Adjusting method

- 1) Check the GND level of the oscilloscope
- 2) Adjust the PCO voltage (A) to the specified value with RV905.

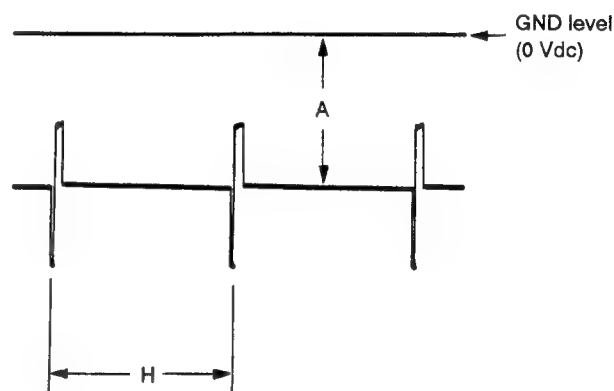


Fig. 7-23.

6. BRIGHT Preset Adjustment (CL-29 Board)

Mode	E-E (VTR POWER ON)
Signal	Color bar turning off the chroma and burst signals
Measurement Point	Pin ③ of CN904 (G OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV901
Specified Value	$A=6.0 \pm 0.1V$

Adjusting method:

- 1) Adjust the potential difference (A) between the reversed waveform pedestal and non-reversed one to the specified value.

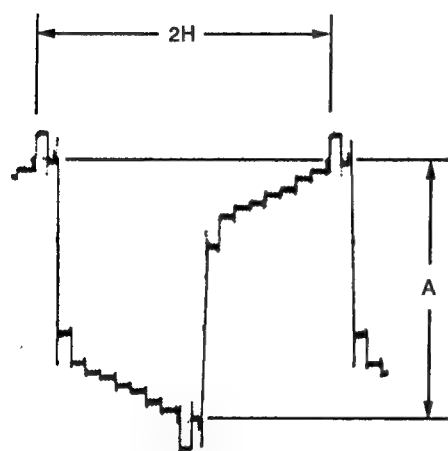


Fig. 7-24.

7. CONTRAST Adjustment (CL-29 Board)

Mode	E-E (VTR POWER ON)
Signal	Color bar turning off the chroma and burst signals
Measurement Point	Pin ③ of CN904 (G OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV902
Specified Value	$A=2.1 \pm 0.1V$

Adjusting method:

- 1) Adjust the 100% white level (A) to the specified value with RV902.

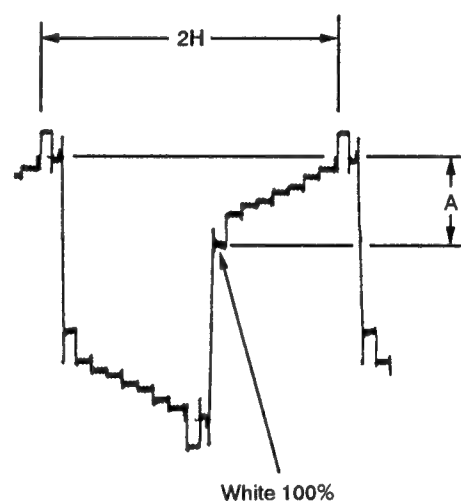


Fig. 7-25.

8. SUB CONT R Adjustment (CL-29 Board)

Mode	E-E (VTR POWER ON)
Signal	Color bar turning off the chroma and burst signals
Measurement Point	Pin ⑦ of CN904 (R OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV906
Specified Value	$A=2.1 \pm 0.1V$

Adjusting method:

- 1) Adjust the 100% white level (A) to the specified value with RV906.

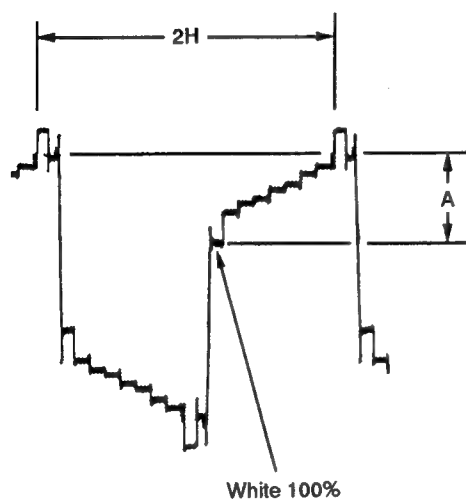


Fig. 7-26.

9. SUB CONT B Adjustment (CL-29 Board)

Mode	E-E (VTR POWER ON)
Signal	Color bar turning off the chroma and burst signals
Measurement Point	Pin ⑧ of CN904 (B OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV907
Specified Value	$A=2.1 \pm 0.1V$

Adjusting method:

- 1) Adjust the 100% white level (A) to the specified value with RV907.

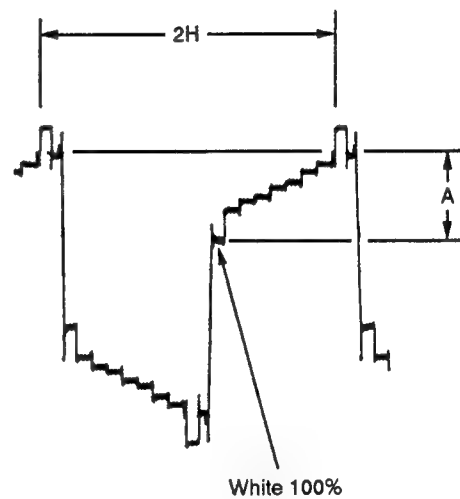


Fig. 7-27.

CCD-TR303E/TR303EP

RMT-507

SERVICE MANUAL



Remote commander is available as a unit. But as individual parts the battery case lid of commander is only available.

AEP Model
UK Model
Australian Model
CCD-TR303E

E Model
CCD-TR303E/TR303EP

**Video8
Handycam**

A MECHANISM

CCD-TR303EP is a model that soft carrying case is added in CCD-TR303E.

CCD-TR303EP and CCD-TR303E have different packing material, etc.

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

SPECIFICATIONS

System

Video recording system

Two rotary heads, Helical scanning FM system

Audio recording system

Two rotary heads, Helical scanning FM system

Video signal PAL colour, CCIR standards

Usable cassette 8 mm video format cassette

Tape speed SP mode: Approx. 20.051 mm (13/16 inch)/s
LP mode: Approx. 10.058 mm (13/32 inch)/s

Recording time SP mode: 1 h and 30 min (P5-90)
LP mode: 3 h (P5-90)

Playback time SP mode: 1 h and 30 min (E5/P5-90)
LP mode: 3 h (P5-90)

Fast-forward/rewind time

Approx. 8.5 min (E5/P5-90)

Image device CCD (Charge Coupled Device)

Viewfinder Electronic viewfinder (black and white)

Lens Combined 10× power zoom lens
f = 6.2 to 62 mm (1/4 to 2 1/2 inches)
F 1.6 to F 2.9
(45 to 450 mm (1 13/16 to 17 5/8 inches) when converted to a 35-mm still camera)
Filter diameter 37 mm (1 1/2 inches)

Autofocus system

TTL autofocus system
inner focus wide macro system

Colour temperature

Automatic

Minimum illumination

1 lx (F 1.6)

Illumination range

1 lx to 100,000 lx
(0.2 to 9,290 footcandles)

Recommended illumination

More than 100 lx (9.3 footcandles)

Output connector

Video output Phono jack, 1 Vp-p, 75 Ω
unbalanced sync negative

Audio output Phono jack
-7.5 dBs (at impedance 47 kΩ)
impedance less than 2.2 kΩ

RFU DC OUT Special minijack, DC 5 V

Remote jack Stereo mini-minijack (ø2.5 mm)

MIC jack Minijack, -66 dBs, low impedance
with 2.5-3 V DC output,
impedance 6.8 kΩ

— Continued on next page —

8 VIDEO CAMERA RECORDER
SONY®



General

Power requirements

On battery mounting surface
6.0 V (battery pack)
7.5 V (AC power adaptor)
9.0 V (alkaline batteries)

Average power consumption

5.3 W (camera recording)
including the viewfinder

Installation

Vertically, Horizontally

Operating temperature

0 °C to 40 °C (32 °F to 104 °F)

Storage temperature

-20 °C to +60 °C (-4 °F to
+140 °F)

Dimensions

Approx. 109 × 109 × 178 mm (w/h/d)
(4 3/8 × 4 3/8 × 7 1/8 inches)

Weight

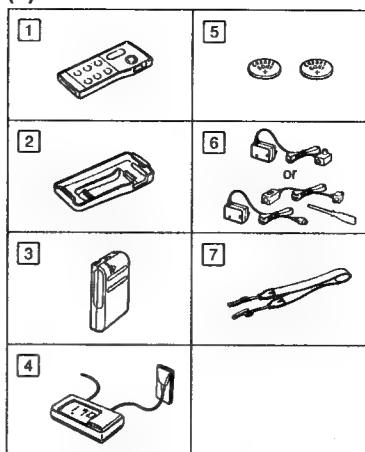
Approx. 770 g (1 lb 11 oz)
excluding the battery pack, lithium
battery, cassette, and shoulder
strap
Approx. 1,000 g (2 lb 3 oz)
including the battery pack NP-55,
lithium battery CR2025, cassette
P5-90, and shoulder strap

Microphone

Electret condenser microphone,
manaural type

Supplied accessories

(A)



(A)

- 1 Wireless Remote Commander (1)
- 2 Remote Commander holder (1)
- 3 Battery pack NP-55 (1)
- 4 AC power adaptor AC-V35 (1)
- 5 Lithium battery CR2025 (2)
(for camcorder/for the Remote Commander)
- 6 RFU adaptor
RFU-90E (1) (AEP model)
RFU-90AS (1) (Australian model)
RFU-89EA with an aerial selector and
a screw driver (1) (UK/E model)
- 7 Shoulder strap (1)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following
safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

Part code and part name of the semiconductor for correction of the print board is described in the space of each print figure. Use this list when ordering parts.

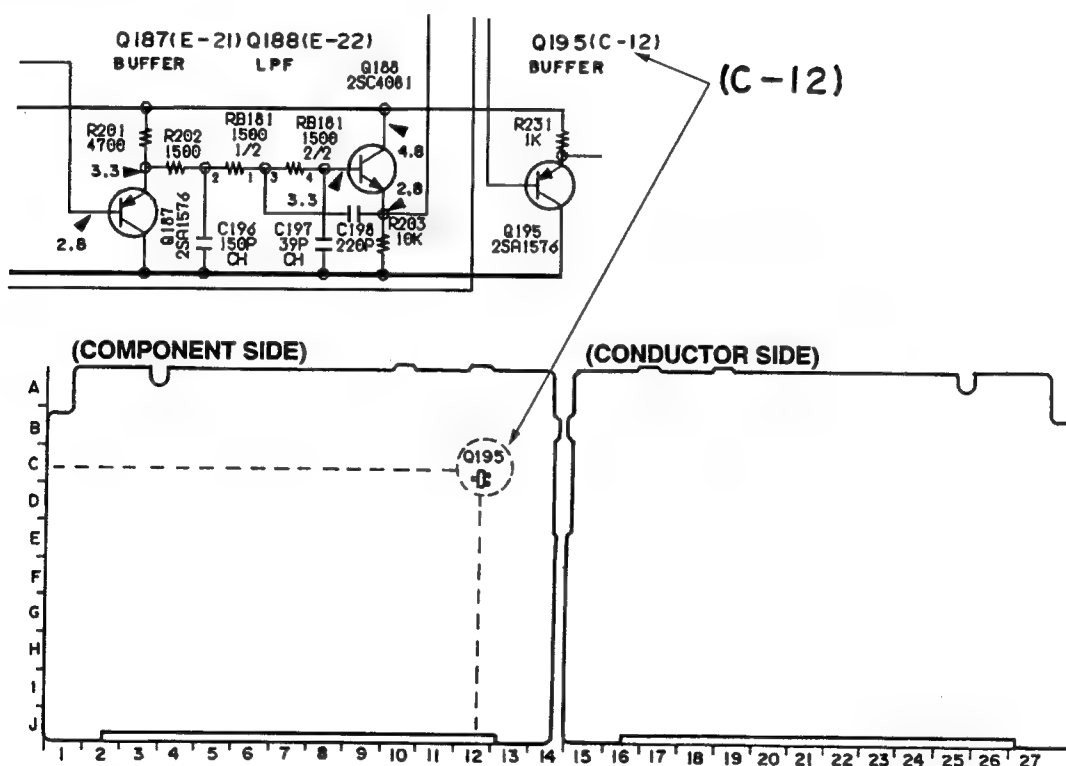
[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 95 and 107.)

This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

- ① Use a blank tape, record a short section, then press the stop button to stop.
- ② Set to recording mode again.
- ③ If the [⊗] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

- ① Play back a pre-recorded tape and display the image on a TV screen.
- ② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

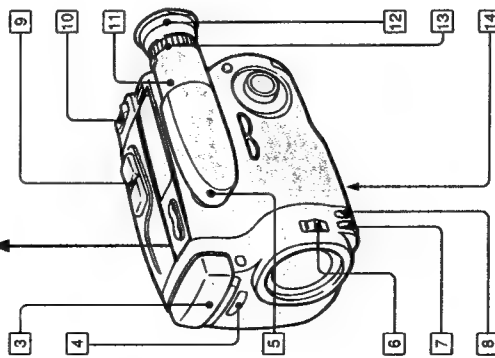
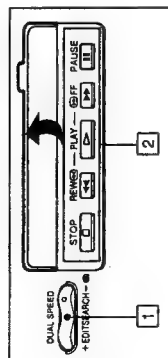
SECTION 1 GENERAL

This section is extracted from instruction manual of AEP/UK model.

Identifying the Parts

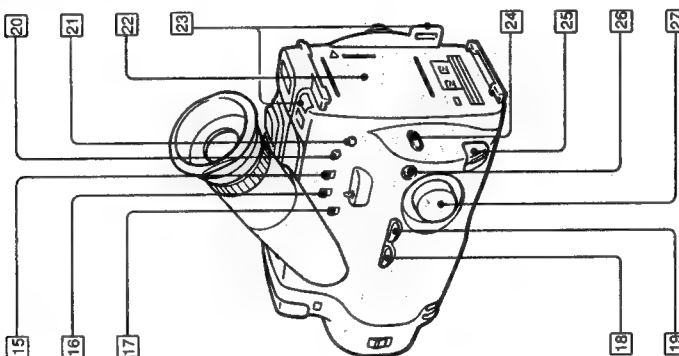
For details on the use of each part, refer to the pages indicated in the parentheses.

(B-1)



- 1 EDITSEARCH button (26)
- 2 Tape transport buttons (37), (38)
 - STOP (stop)
 - ◀ REW (rewind)
 - ▶ PLAY (playback)
 - ▶▶ FF (fast forward)
 - || PAUSE (pause)
- 3 Built-in microphone (monaural)
- 4 Remote sensor (7)
- 5 Camera recording/battery lamp (24)
- 6 LENS COVER switch (23)
- 7 Focus dial (27)
- 8 FOCUS button (27)
- 9 Power zoom button (25), (27)
- 10 POWER switch
- 11 Viewfinder (22)
- 12 Eyecup
- 13 Viewfinder lens adjustment ring (22)
- 14 Lithium battery compartment (9)

(B-2)

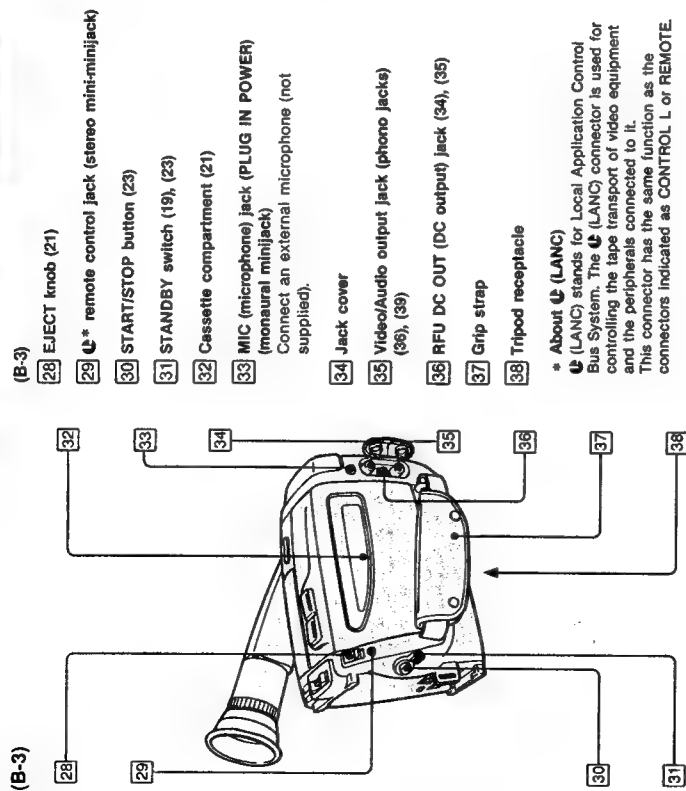


- 15 REC MODE (recording mode)/EDIT switch (23), (39)
- | Mode | Recording | Playback | Editing |
|-----------------|------------------------|--------------|--------------|
| Setting | REC MODE
SP
L.P. | EDIT
L.P. | EDIT
L.P. |
| Function switch | Recording mode | EDIT switch | |
- 16 REMOTE COMMANDER ON/OFF switch (7)
 - 17 BEEP switch (22)
 - 18 DATE (+) button (19), (24), (31)
 - 19 TIME (NEXT) button (19), (24), (31)
 - 20 SUMMERTIME button (19), (31)
 - 21 AREA button (31)
 - 22 Battery mounting surface (12)
 - 23 Hooks for shoulder strap
 - 24 COUNTER RESET button (23)
 - 25 BATT (battery eject) knob (12)
 - 26 FADER button (30)
 - 27 PROGRAM AE dial (28)

Identifying the Parts

(B-2)

Identifying the Parts



(B-4)



Caution (B-4)
Do not pick up the camcorder as shown in the illustration.

Identifying the Parts

Wireless Remote Commander

You can remotely record or play back a tape. The buttons on the Remote Commander with the same name or same mark as those on the camcorder have the same function.

When you use the Remote Commander

Be sure to insert the supplied lithium battery into it (page 10), and to set REMOTE COMMANDER ON/OFF on the camcorder to "ON".

(B-5)

- 1 Transmitter
- 2 Power zoom button (25), (27)
- 3 Tape transport buttons (37), (38)
- 4 START/STOP button
- 5 HOLD switch*
Slide in the direction of the arrow to prevent the buttons from being accidentally depressed.

6 DATA SCREEN button* (38)

Press to erase or display the on-screen display.

Note

The * indicates the function which is operable only with the Remote Commander.

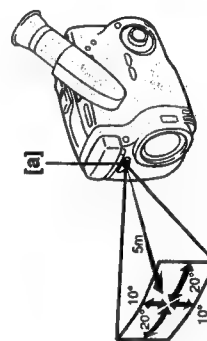
Remotely controllable area (B-6)

Point the Remote Commander towards the remote sensor [a].

Notes on the Remote Commander

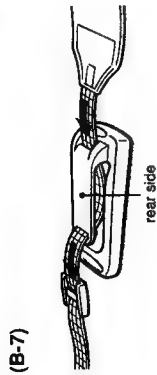
- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works through the signals of commander mode "VTR 2". A commander mode is used to distinguish this camcorder from other Sony VTR to avoid misoperation. If you use another Sony VTR at commander mode "VTR 2", we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

(B-6)

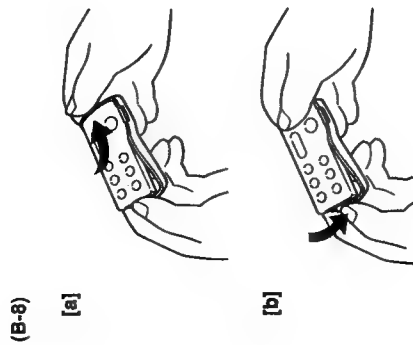


Identifying the Parts

Using the Remote Commander holder
You can clip the Remote Commander holder on your coat pocket or belt, or also slide it onto the shoulder belt before attaching the Remote Commander to it. (B-7)



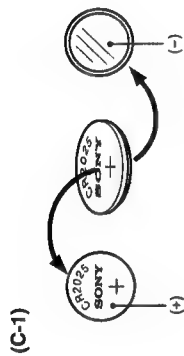
- (B-8)
- [a] When attaching the Remote Commander to the Remote Commander holder
- [b] When detaching the Remote Commander from the Remote Commander holder



8

Preparing your camcorder 1 Inserting the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a positive (+) side and a negative (-; no mark) side as illustrated. Be sure to install the lithium battery with the correct polarity. (C-1)

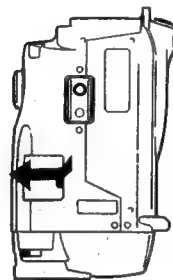


Inserting the Lithium Battery into the Camcorder

(C-2)

This camcorder uses a lithium battery to activate the clock. At first install the supplied lithium battery.

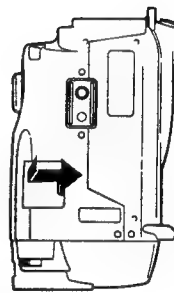
- 1 Detach the lid of the lithium battery compartment at the bottom.
- 2 Install the supplied CR2025 lithium battery with the positive (+) side facing out.
- 3 Replace the lid.



2



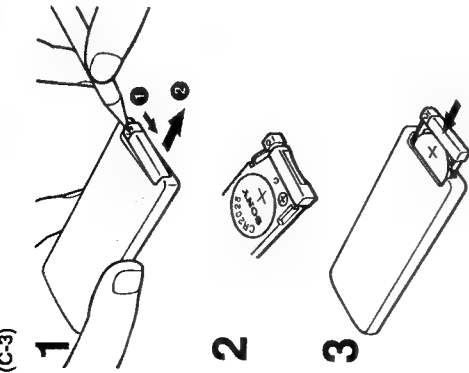
3



To change the lithium battery
Detach the lid of the lithium battery compartment, and replace the lithium battery with a new one.
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, resetting of the date and time will be necessary.

9

Inserting the Lithium Batteries




(C-3)

Inserting the Lithium Battery into the Remote Commander

- 1 Pull out the lithium battery holder from the Commander.
- 2 Install the lithium battery with the positive (+) side facing upward.
- 3 Put the lithium battery holder back into the Commander.

(C-4)



Lithium battery life (under normal operation)
(C-4)
The battery for the camcorder lasts for approximately 1 year.
When the battery becomes weak, the  indicator will flash inside the viewfinder for about 5 seconds (when the POWER switch is set to CAMERA).
The battery for the Remote Commander lasts for approximately 6 months. When the battery becomes weak or dead, the Commander does not work.
In either case, **replace the battery with a Sony CR2025 battery. Use of any other type of battery may present the risk of fire or explosion.**

CAUTIONS

- Keep the lithium battery out of the reach of children.
Should the battery be swallowed, immediately consult a doctor.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated.
Do not recharge, disassemble, or dispose of in fire.

Preparing your camcorder 2 Connecting the Power Sources

First, Choose the Power Source.

Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-55H, NP-66H, NP-77, NP-77H, NP-77HD
Indoors	Alkaline batteries	Battery case EBP-77
	House current	AC power adaptor AC-V35 (supplied), AC-V55, AC-S10
In the car	12V or 24V car battery	DC pack DCP-77, AC power adaptor AC-V55, the car battery cord DCC-16AE and the car battery charger DC-S10

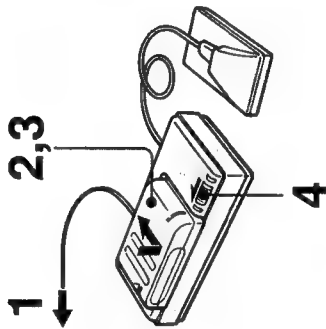
For details, see the operation manual of the accessory you want to use.

Using the Battery Pack

Step 1

Charge the battery pack. (D-1)

- 1 Connect the AC power adaptor to a wall outlet.
- 2 Align the right side of the battery pack with the line on the AC power adaptor.
- 3 Slide in the battery pack to the right.
- 4 Set the selector to "CHARGE" position.
When charging is finished, the charge lamp goes out.



(D-1)

	NP-55	NP-55H	NP-77H/77HD	NP-77	NP-66H
Required charging time *	60	70	140	120	110
Battery life **	60	70	140	120	115

* Approximate minutes using AC-V35

** Approximate minutes using fully charged battery pack, continuous recording indoors

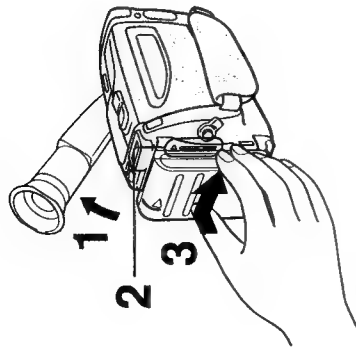
(continued)

Connecting the Power Sources

Step 2

Mount the battery pack on the camcorder. (D-2)

- 1 Lift up the viewfinder.
- 2 Align the right side of the battery pack with the white line on the camcorder.
- 3 Slide the battery pack to the right.



(D-2)

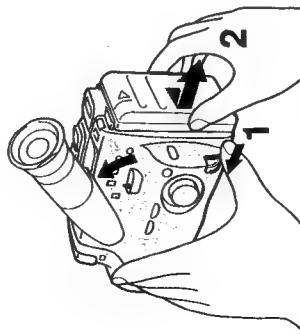
Note

Make sure that the battery fits completely on the mounting surface of the camcorder.

To remove the battery pack

(D-3)

While pressing the BATT knob in the direction of the arrow (1), slide the battery pack to the left and pull it out as illustrated (2).

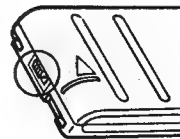


(D-3)

How to use the switch on the battery pack

(D-4)

This switch is provided so that you can remember the charging condition. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is dead.



(D-4)

Connecting the Power Sources

Remaining battery indicator

You can check the remaining battery capacity with the remaining battery indicator inside the viewfinder. The decreasing white bar indicates decreasing battery power. (D-5)



(D-5)

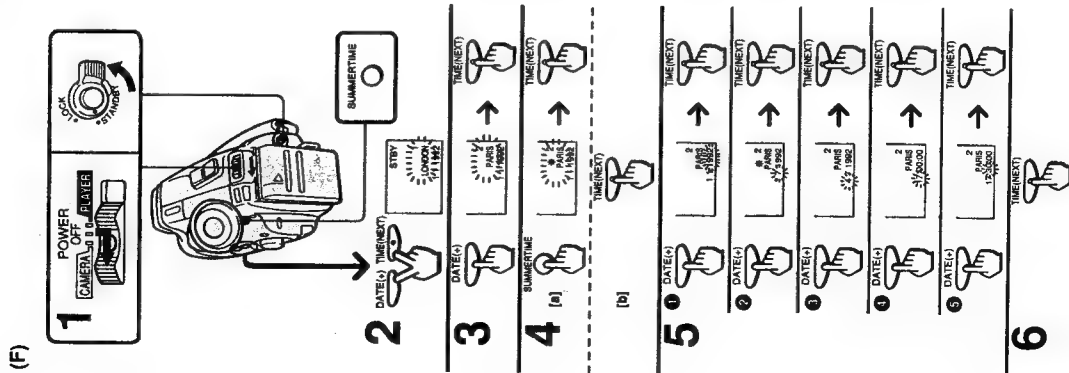
Note

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack. The indicator of NP-77HD is more accurate.

Other options for charging

- AC-V55 AC power adaptor:
You can charge two battery packs simultaneously.
- AC-S10 AC power adaptor:
This adaptor has a discharging function. When you want charging only, slide the skip switch on the adaptor in the direction of the arrow.
- BC-55 portable battery charger:
You can charge a battery pack on 100–240 V AC.
- DC-S10 car battery charger:
This charger has a discharging function. When you want charging only, slide the skip switch on the charger in the direction of the arrow.

Preparing your camcorder 3 Setting the Date and Time



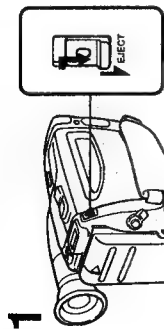
Setting the Date and Time

- To advance the digits faster: Keep DATE (+) pressed.
- To check the preset date and time: Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.
- To reset to standard time: Press SUMMERTIME. The * indicator goes off.
- If the camcorder goes off abruptly while setting the date and time: If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will go off automatically. Turn STANDBY down once and slide it up again.

Preparing your camcorder 4

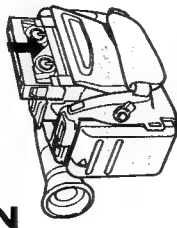
Inserting a Cassette

(G-1)

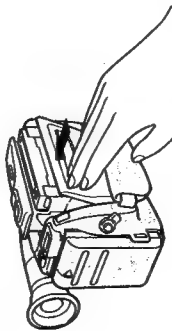


- 1 While pressing the small button on the EJECT knob, slide the knob down. The cassette compartment automatically lifts up and opens toward you.
- 2 Insert a tape with the window facing out.
- 3 Close the cassette holder by pressing the "PUSH" mark on the cassette holder.

2



3

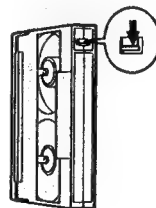


Ejecting the Cassette



Make sure that a power source is connected.

- 1 While pressing the small button on the EJECT knob, slide the knob down.
- 2 Take out the tape.
- 3 Close the cassette holder by pressing the "PUSH" mark on the cassette holder.

(G-2)



Preventing Accidental Erasure

Slide the tab on the cassette to expose the red mark. This will prevent accidental erasure of the recording.
To re-record on this tape, slide the tab back out covering the red mark.
If you try to record with the red mark exposed, the  and  indicators flash inside the viewfinder.

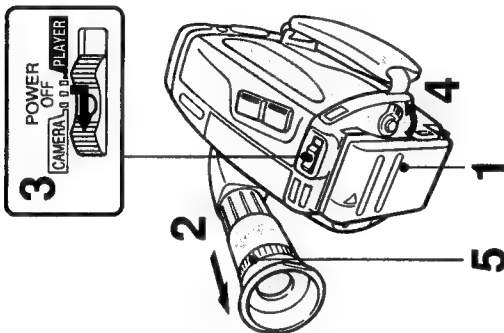
Note on handling tapes
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape, or if the tab is out or in, etc.

Preparing your camcorder 5

Adjusting the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust it when you use the camcorder for the first time, or when you use it after someone else did. (H)

- 1 Make sure that the power source is connected and that the cassette is inserted.
- 2 Pull the viewfinder out until it clicks.
- 3 While pressing the green button, set the POWER switch to CAMERA.
- 4 Turn STANDBY up.
- 5 Turn the viewfinder lens adjustment ring so that "STBY" displayed in the viewfinder screen comes into sharp focus.

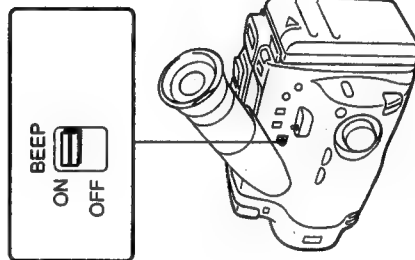


(H)

Checking the BEEP Switch

(I)

A beep sounds when you start recording and two beeps sound when you stop recording, confirming the operation.
Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, set the BEEP switch to OFF.



(I)

Recording a Picture Using Automatic Adjustments

Before recording "once-only" events, we strongly recommend you make a trial recording and check that everything is working properly.

If you set the date (page 19), the date is automatically recorded for 10 seconds after you start recording (Auto Date feature). This feature works only once a day.
If you set the BEEP switch to ON, beeps sound when you start or stop recording or when you make a mistake in the operation.

Start Recording

(J-1)

- 1 Hold the camcorder as illustrated.
- 2 Make sure that the viewfinder is pulled out.
- 3 Slide LENS COVER to OPEN.
If it is not open, you cannot record.
- 4 While pressing the green button, set the POWER switch to CAMERA.
- 5 Set the REC MODE switch to LP (long play) or SP (standard play), according to the length of your planned recording.
- 6 Set the white mark of the PROGRAM AE dial to the green position.

7 Turn STANDBY up.
"STBY" appears inside the viewfinder.

8 Press START/STOP.
"REC" appears and the red lamp lights up inside the viewfinder. The camcorder is now recording.

To standby (to stop momentarily)

Press START/STOP again.
"STBY" appears inside the viewfinder. The camcorder is in standby mode again.

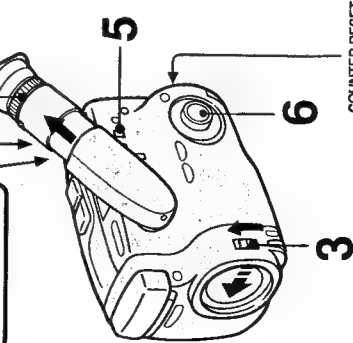
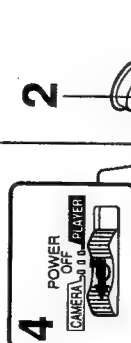
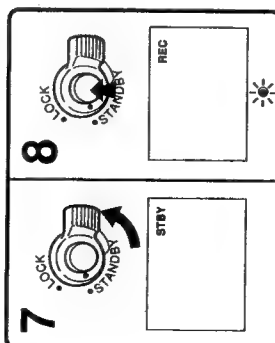
To stop
Turn STANDBY down and set the POWER switch to OFF.

To reset the counter to 00:00:00
Press COUNTER RESET.

Notes on recording

- Shoot the subject at the wide-angle position in macro. At the telephoto position, if the subject is closer than 80 cm, it cannot be brought into focus.
- To record from the beginning of the tape, run the tape for about 13 seconds before recording. This will avoid missing the starting point when the tape is played back.

(J-1)



COUNTER RESET

Recording a Picture Using Automatic Adjustments

(J-2)

For low-position recording (J-2)
The viewfinder can be turned 90 degrees upward.
It can be used in either the pushed-down or pulled-out position.

To check the remaining time of the tape during recording (J-3)

In recording mode, the remaining tape length indicator appears inside the viewfinder and changes as illustrated.

Near the end of the tape

The indicator, the red lamp inside the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

Note on the standby mode

If you leave the camcorder in standby mode for 5 minutes or more, the camcorder will go off automatically. To resume standby mode, turn STANDBY down once and slide it up again. To start recording, press START/STOP directly.

Note on the auto date feature

The auto date feature works once a day. However, the date may automatically appear more than once a day when:

- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.

Recording mode

You can record and play back a picture on a tape in both SP (standard play) and LP (long play) modes. However, the quality of the playback picture in the LP mode will not be as good as that in the SP mode.

Recording Date or Time

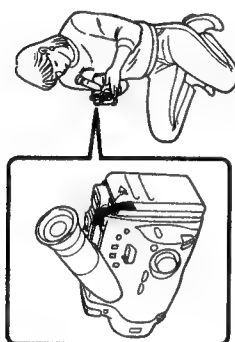
(J-4)

During camera recording or when in standby mode, press DATE(+) for date indicator or TIME(NEXT) for time indicator.
The date or time displayed inside the viewfinder is recorded with the picture.

To stop recording date or time

Press DATE(+) or TIME(NEXT) again.
The date or time indicator disappears.
The picture recording continues.

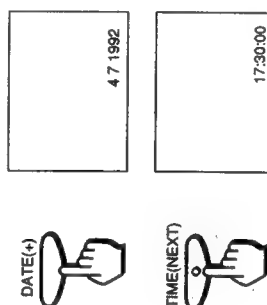
(J-2)



(J-3)

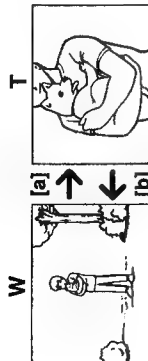


(J-4)



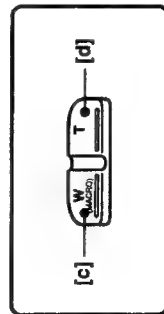
Recording a Picture Using Automatic Adjustment

(J-5)



By zooming, you can change the size of the subject in the scene. Use "zoom-in (Telephoto)" for dramatic close-ups [a], and "zoom-out (Wide-angle)" for panoramic long shots [b]. Also use the zoom to focus manually or to decide the shooting angle.
For more professional-looking recordings, use zooming sparingly.

(J-6)



Dual-Speed Zooming (J-6)

The camcorder's power zoom button offers dual speed zooming. Press it firmly for high speed zooming and softly for relatively slow zooming.

[c] W side: for wide-angle (subject appears farther away)
[d] T side: for telephoto (subject appears closer)

Autofocusing in macro

Even small subjects, such as flowers, insects, and images in photographs, can literally fill the screen using autofocusing in macro. We recommend you to use a tripod when shooting in macro.

1 Bring the camcorder as close as necessary to obtain the desired subject size.

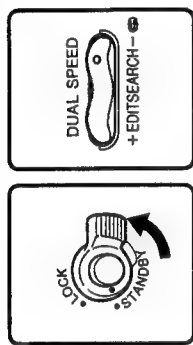
2 Keep pressing the W (MACRO) side of the power zoom button until the zooming stops (wide-angle).

Manual focusing in macro

You can also shoot with manual focus while doing close-up.
For manual focusing, see page 27.

Recording a Picture Using Automatic Adjustments

(J-7)



Checking the Recorded Picture Inside the Viewfinder (EDITSEARCH)

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture inside the viewfinder. After checking your recorded picture, you can also re-record over a previously recorded portion.

To review the last recorded scene — Rec Review
You can check the last portion of a scene you just recorded in CAMERA mode. This is convenient for quick, on-the-spot checks.

1 Set the camcorder in standby mode by turning STANDBY up.

2 Press the — side of EDITSEARCH (⏮) momentarily.

The last few seconds of the recorded portion are played back inside the viewfinder. Then, the camcorder goes back to standby mode, ready for the next recording.

To check your recorded picture

You can check the recorded picture inside the viewfinder. After checking, you can also re-record over a previously recorded portion.

1 Set the camcorder in standby mode by turning STANDBY up.

2 Keep pressing the + side or — side of EDITSEARCH to play back the picture while looking inside the viewfinder.

+ side: to view the forward playback picture
— side: to view the reverse playback picture
Press EDITSEARCH softly to transport the tape at normal speed or firmly to transport the tape at high speed.

To stop playback, release EDITSEARCH.

3 If you want to re-record over a recorded portion, follow the procedures below:

1 Press the + side or — side of EDITSEARCH to locate the point you want to begin re-recording.

2 Press START/STOP to begin re-recording. Re-recording begins from the point you released EDITSEARCH. As long as the tape is not ejected, the transition between the scenes will be smooth.

Dual speed EDITSEARCH button

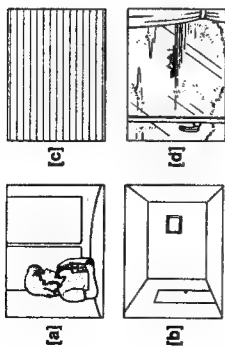
The camcorder's EDITSEARCH button offers dual speed transport of the tape. Press it softly to transport the tape at normal speed (◀ or ▶ appears inside the viewfinder), or firmly to transport the tape at high speed (⏮ or ⏭ appears inside the viewfinder).

Manual Focusing

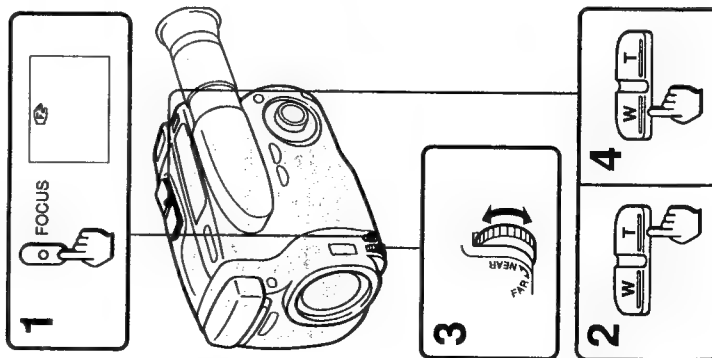
We recommend manual focusing in the following cases. (K-1)

- [a] Too bright behind the subject
- [b] Subjects with little contrast—wall, sky, etc.
- [c] Horizontal stripes
- [d] Subject through frosted glass
- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be in focus)
- When shooting a stationary subject using tripod
- When you want to save battery power

(K-1)



(K-2)



Focusing Manually

(K-2)

- 1 Press FOCUS .
The \square (manual focusing) indicator appears inside the viewfinder.
- 2 Keep pressing the T side of the power zoom button until the zooming stops (telephoto).
- 3 Turn the focus dial to achieve sharp focus.
- 4 Keep pressing the W side of the power zoom button to obtain the desired subject size.

To reactivate autofocus

Press FOCUS again so that the \square indicator disappears.

Shooting in relatively dark places
Shoot at wide angles after focusing in telephoto.

Note

The focus dial does not have a stop position.

Using the PROGRAM AE Function

When you use the PROGRAM AE (Auto Exposure) function, you can create a "portrait" effect or capture high-speed action using the "sports" mode or "high-speed shutter" mode. When you record fireworks or neon signs, use "twilight" mode.

(L-1)

Set the white mark of the PROGRAM AE dial to the desired PROGRAM AE mode.
The indicator of the selected PROGRAM AE mode appears inside the viewfinder.

The PROGRAM AE mode indicator changes as follows:

No indicator (normal mode)



\square ("Portrait" mode)



\square ("Sports" mode)



\square ("High-speed shutter" mode)

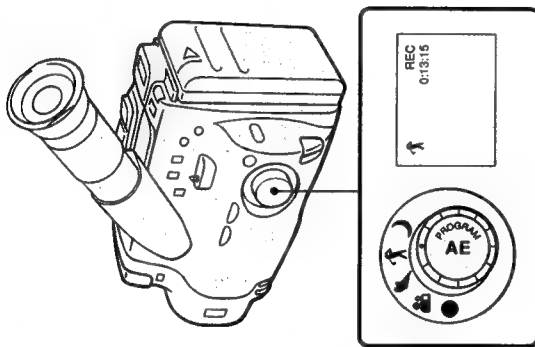


\square ("Twilight" mode)

To restore automatic adjustment

Set the white mark of the PROGRAM AE dial to the green position.

(L-1)



Using the PROGRAM AE Function

(L-2)

To select the mode

(L-2)

You may want to use the respective mode when shooting the following subjects or when shooting under the following conditions:

[a] Portrait mode

- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming on a subject in the telephoto mode

[b] Sports mode

- Recording a landscape while in a moving car
- Outdoor sports scene such as football or tennis
- Subjects moving at high speed, such as a roller coaster on a cloudy day

[c] High-speed shutter mode

- Shooting a golf swing or a tennis match with the tennis ball captured clearly on a fine day
- You wish to play back certain scenes having high speed movement and getting a clear, sharp picture

[d] Twilight mode

- Recording a night view, fireworks, or neon signs

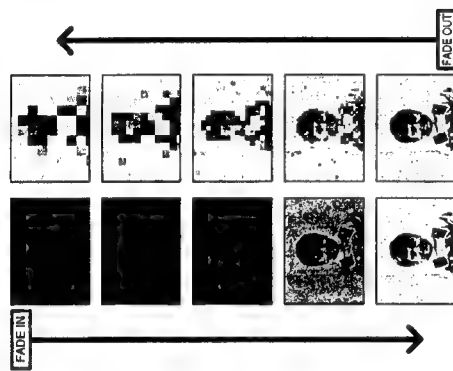
Note

The shutter speed in each PROGRAM AE mode is as follows:

- Portrait mode — between 1/60 to 1/2000
- Sports mode — between 1/60 to 1/500
- High-speed shutter mode — 1/4000
- Twilight mode — 1/60



(M-1)

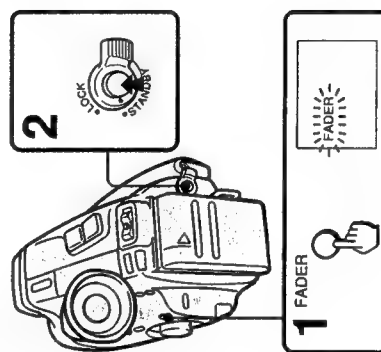


(M-1)

You can fade-in or fade-out to give your recording a professional touch. When fading-in, the picture will gradually appear from black or mosaic. The sound will also gradually increase. When fading-out, the picture will gradually fade to black or mosaic. The sound will also gradually decrease.

Fade-in and Fade-out

(M-2)



Fading-in or fading-out (M-2)

Each time you press FADER, the indicator inside the viewfinder changes as follows:

(No indicator) → FADER (black fade) → M. FADER (mosaic fade)

1 Select the type of fade by pressing FADER as follows:

- When fading-in, press FADER after turning STANDBY up to put the camcorder into standby mode. The fade indicator starts flashing. When fading-out, press FADER while recording. The fade indicator starts flashing.

2 Press START/STOP.

When fading-in, the fade indicator stops flashing and the recording starts fading-in. When fading-out, the fade indicator stops flashing and the picture fades out and then the recording stops.

To cancel the fade-in/fade-out function before it is performed
Before pressing START/STOP, press FADER until the fade indicator disappears.

Using the World Clock

This camcorder has a world clock. While traveling abroad, you can easily adjust time of the place where you are using the camcorder by pressing AREA. Before pressing AREA, set the date and time in your country (see page 19).

(N-1)

- 1 While pressing the green button, set the POWER switch to CAMERA.
- 2 Turn STANDBY up to set the camcorder in standby mode.
- 3 Press TIME (NEXT). The time in your country appears inside the viewfinder.
- 4 Press AREA until the area name and number where you are now using the camcorder appear. You can find the area name and number in the "Time Zone Chart" on the pages 32 and 33.

To check the date

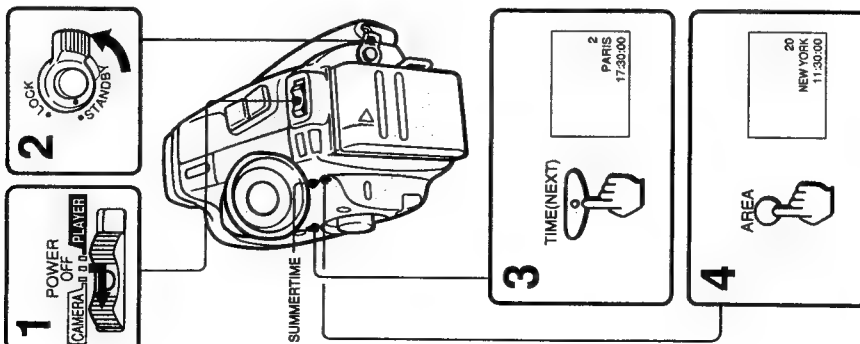
Press DATE (+).

To turn off the date indication, press DATE (+) again.

To reset to your country area time

Press AREA until your country area and number appears.

(N-1)



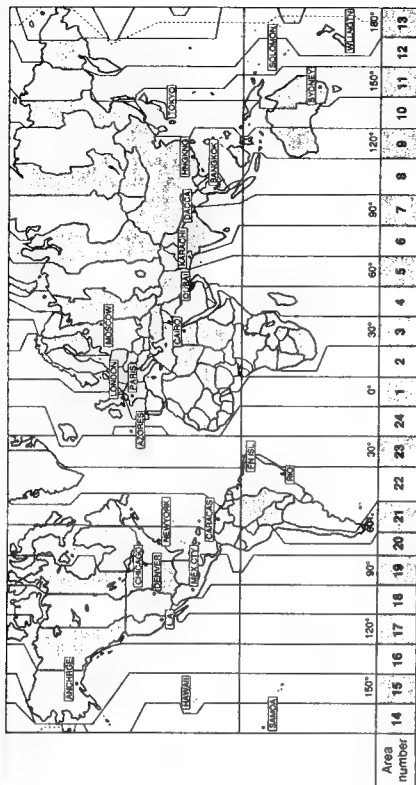
(N-2)

To set summer time (N-2)
Press SUMMERTIME. Time changes to summer time. * indicator appears inside the viewfinder. To set to standard time, press SUMMERTIME again.



Using the World Clock

Time Zone Chart





Area number	Area name	Countries or area *
1	LONDON	England, Morocco, Portugal, GMT (Greenwich Mean Time)
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CST (Continental Standard Time), Tunisia
3	CAIRO	Egypt, Finland, Greece, Israel, Turkey
4	MOSCOW	Ethiopia, Iraq, Kenya, Mauritius, Saudi Arabia, Seychells, former U.S.S.R (Moscow)
5	DUBAI	United Arab Emirates
6	KARACHI	Moldives, Pakistan
7	DACCA	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HNGKNG	Australia (Perth), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (Sydney)
12	SOLOMON	New Caledonia
13	WLLNGTN	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	Hawaii I., Tahiti, HST (Hawaii Standard Time)
16	ANCHRGE	U.S.A. (Alaska), AST (Alaska Standard Time)
17	L.A.	U.S.A. (Los Angeles, San Francisco), PST (Pacific Standard Time)
18	DENVER	U.S.A. (Denver), MST (Mountain Standard Time)
19	CHICAGO	Mexico, U.S.A. (Chicago), CST (Central Standard Time)
20	NEWYORK	Canada (Montreal), Jamaica, Peru, U.S.A. (New York, Washington D.C.), EST (East Standard Time)
21	CARACAS	Chile, Dominica, Venezuela
22	RIO	Argentina, Brazil, Uruguay
23	FN ISL.	Fernando de Noronha
24	AZORES	Azores Islands

* These are common names. The formal names may be different.

Playing Back a Tape

Turn on the TV, and select the channel for viewing a playback picture (set the TV/VIDEO selector to VIDEO).

Of course, you can monitor the playback picture inside the viewfinder at the same time. (P-1)

1 While pressing the green button, set the POWER switch to **PLAYER**.

2 Insert a tape.

3 Press Δ . Playback starts.

To view a still picture, press **II** during playback. To resume playback, press **II** or Δ again.

Notes

- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.
- Streaks appear and sound is muted in still picture mode.

To rewind the tape, press \blacktriangleleft .

To advance the tape rapidly, press \blacktriangleright .

To stop the tape, press \square .

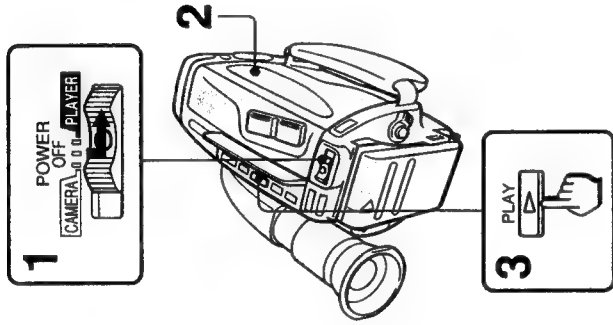
To stop the tape momentarily, press **II**.

In playback pause mode, you can view the picture in a sequence of stop-motion images by pressing **EDITSEARCH**. If you keep pressing **EDITSEARCH**, you can view the picture playback in the forward or reverse direction.

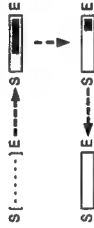
To check the remaining time of the tape during playback (P-2)

In playback mode, the remaining tape length indicator appears inside the viewfinder and changes as illustrated.

(P-1)



(P-2)



Playing Back a Tape

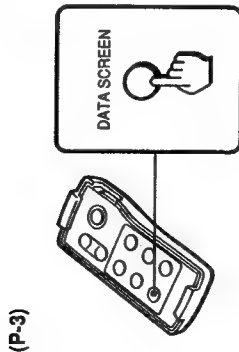
Monitoring a High-Speed Picture

To locate a scene (picture search) Keep pressing ◀ or ▶ during playback. You can monitor the picture at high speed as long as you keep pressing the button. To resume a normal playback, release the button.

To locate a scene quickly (skip scan) Keep pressing ◀ or ▶ during rewinding, or ▶ during advancing the tape rapidly. You can monitor the picture at high speed as long as you keep pressing the button. To resume a normal fast forwarding or rewinding, release the button. To resume a normal playback, press ▷.

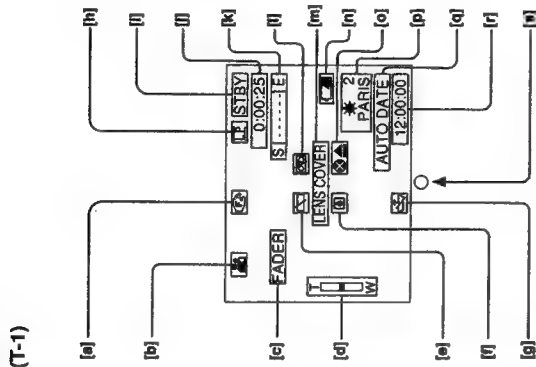
Displaying the Viewfinder Screen Indicators on the TV

(P-3) Press DATA SCREEN on the Remote Commander. The indicators inside the viewfinder screen appear on the TV. To erase the indicators, press DATA SCREEN again.



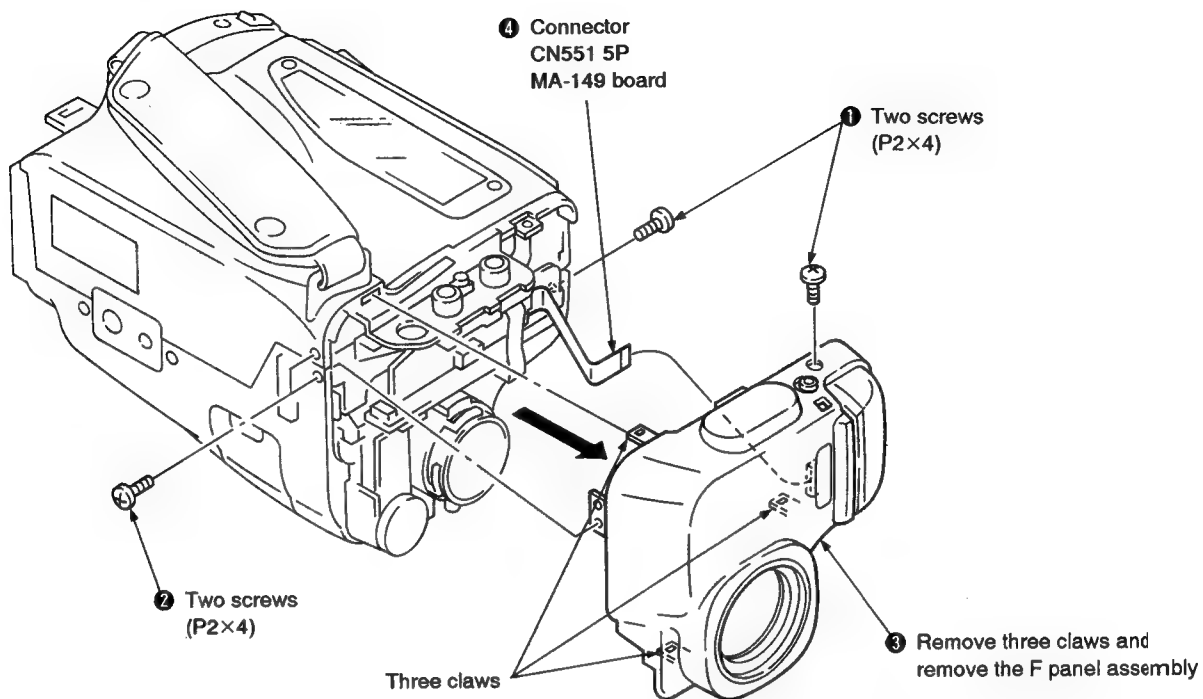
Indicators inside the Viewfinder

- (T)
- [a] Manual focusing
 - [b] Setting of PROGRAM AE mode
 - [c] FADER is pressed.
 - [d] Power zoom indicator
 - [e] "Replace battery."
 - [f] "Moisture has condensed."
 - [g] "Replace lithium battery."
 - [h] Recording/playback mode (LP/SP)
 - [i] Tape transport and camera recording mode
 - [j] Tape counter
 - [k] Remaining tape length indicator
 - [l] "Exchange tape or no cassette inside."
 - [m] The lens cover is closed.
 - [n] Remaining battery indicator
 - [o] "Clean video heads (⊗)" or "trouble has occurred (⊕)".
 - [p] World clock indicator
 - [q] Auto date indicator
 - [r] Date or time
 - [s] Lights up during recording. When flashing: "Replace battery."

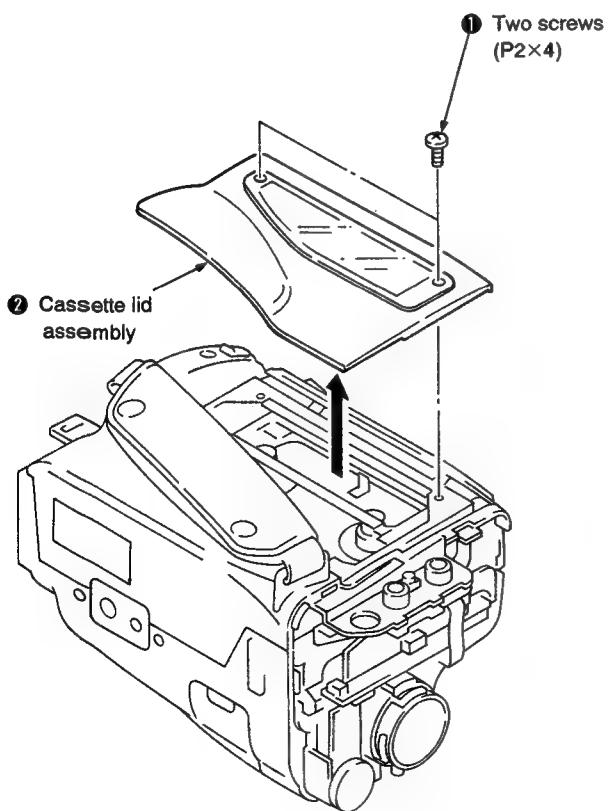


SECTION 2 DISASSEMBLY

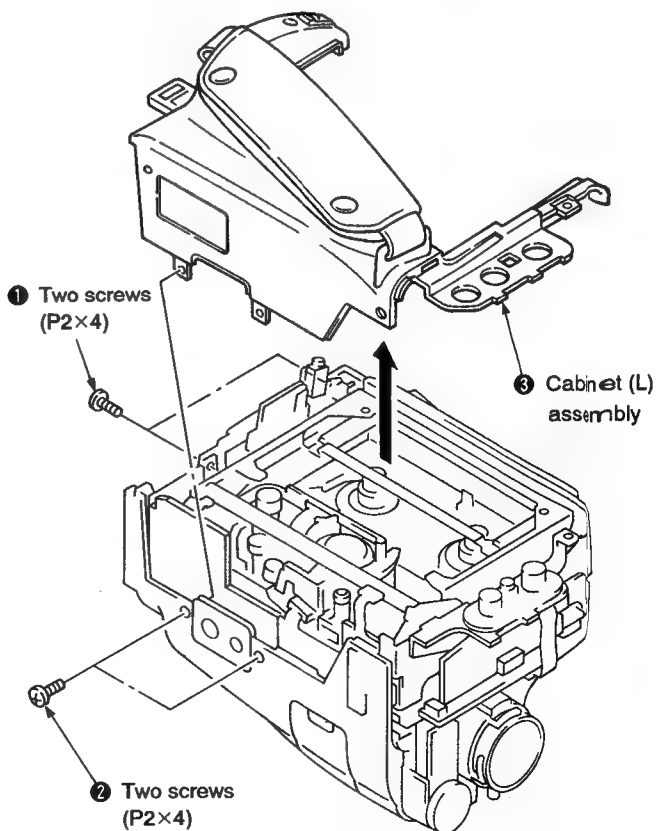
2-1. REMOVAL OF F PANEL ASSEMBLY



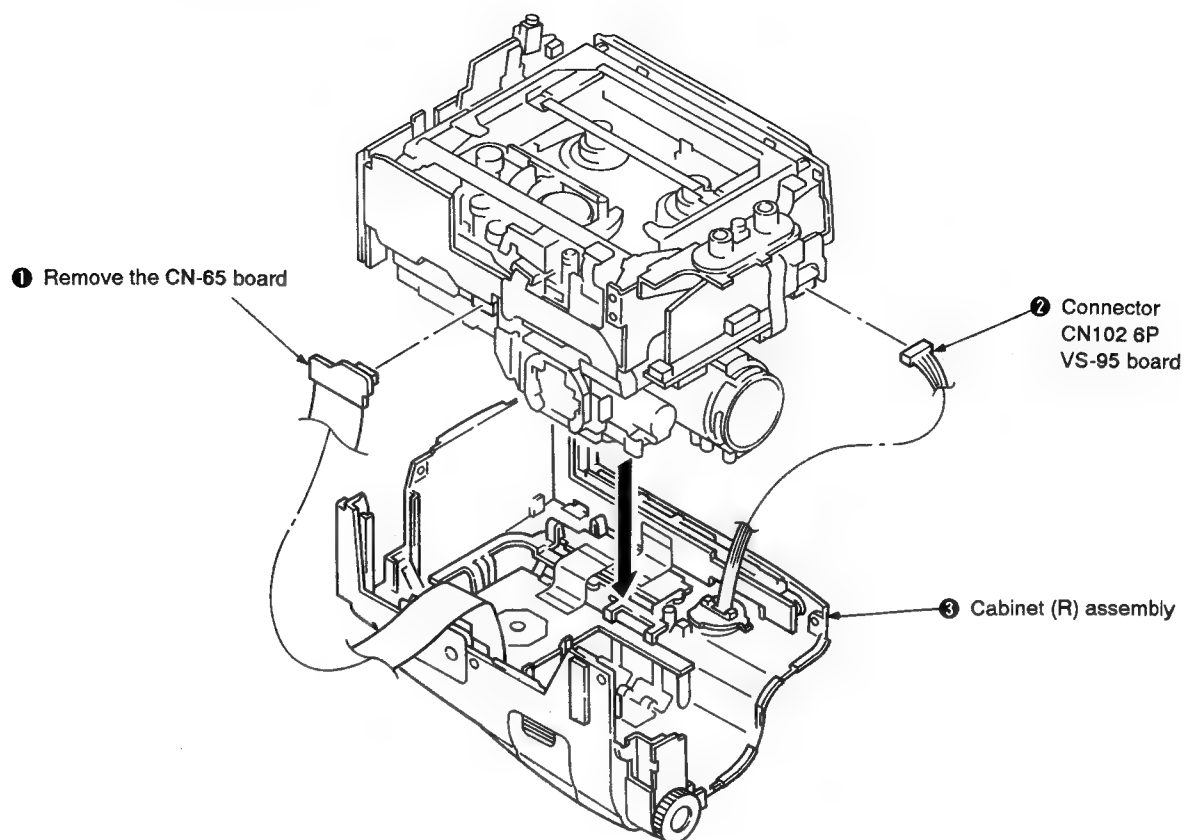
2-2. REMOVAL OF CASSETTE LID ASSEMBLY



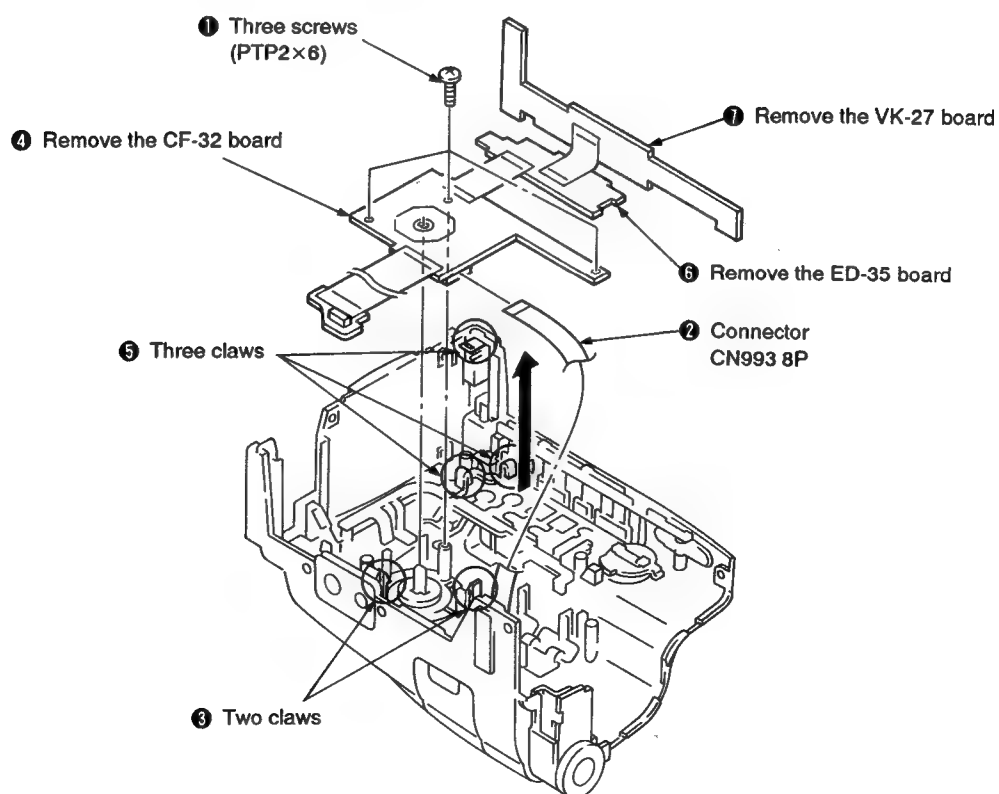
2-3. REMOVAL OF CABINET (L) ASSEMBLY



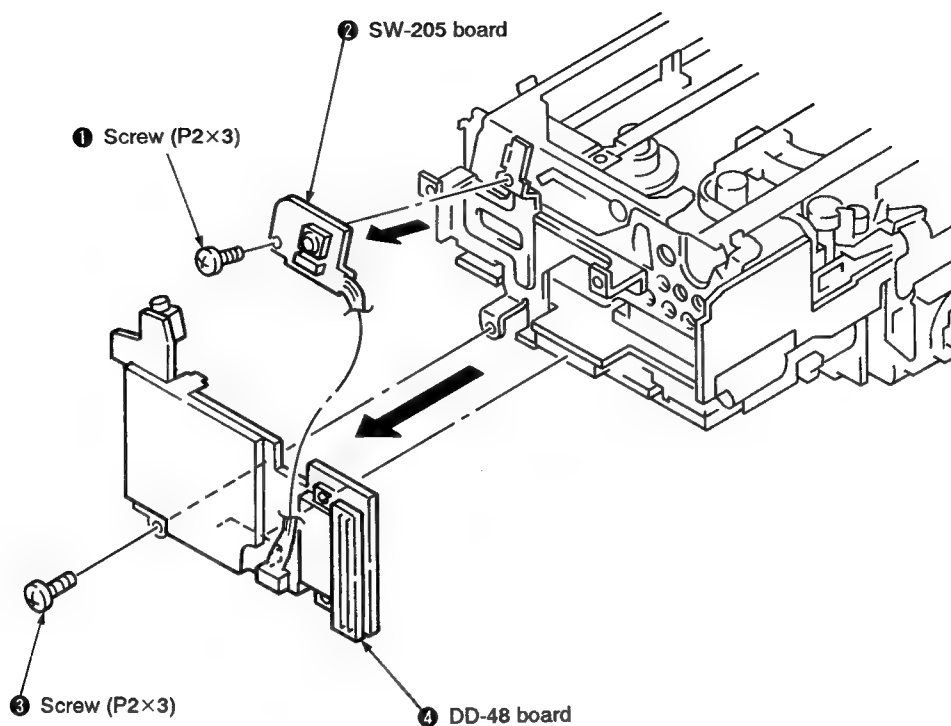
2-4. REMOVAL OF CABINET (R) ASSEMBLY



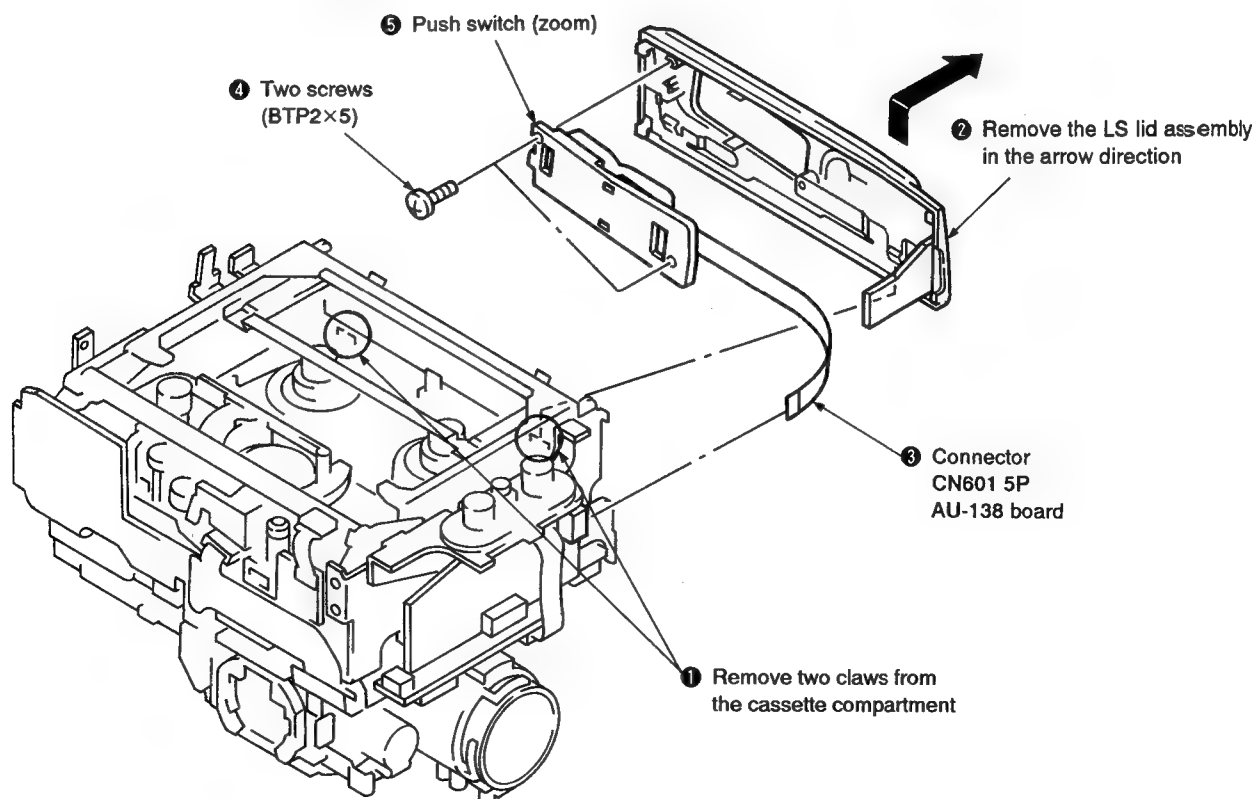
2-5. REMOVAL OF CF-32, ED-35 AND VK-27 BOARDS



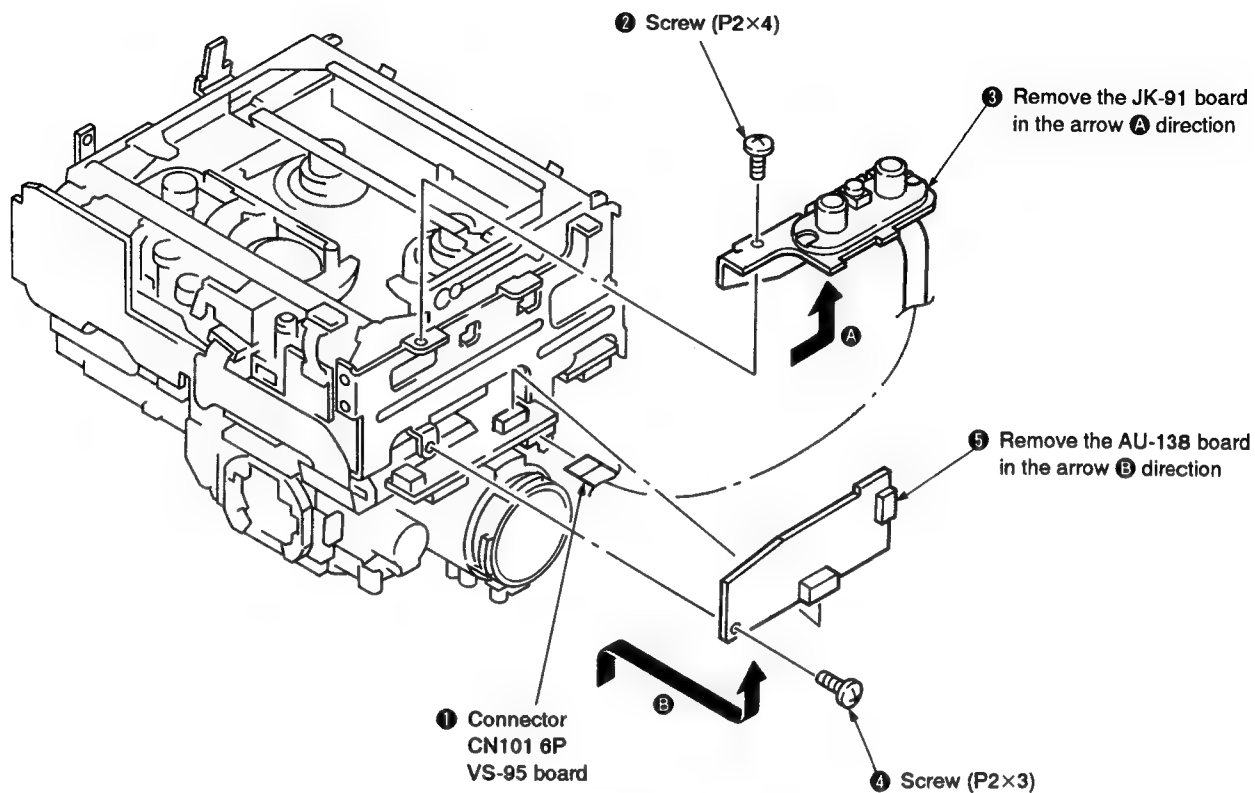
2-6. REMOVAL OF DD-48 AND SW-205 BOARDS



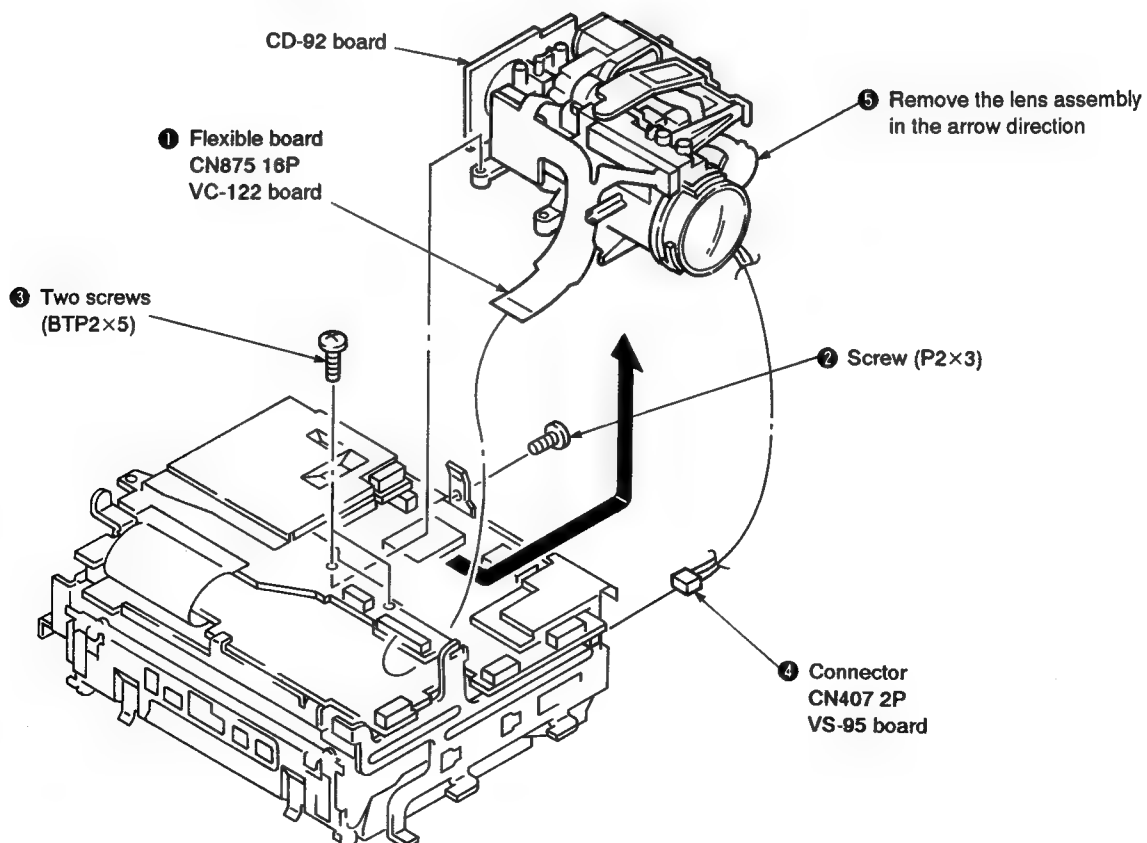
2-7. REMOVAL OF LS LID ASSEMBLY



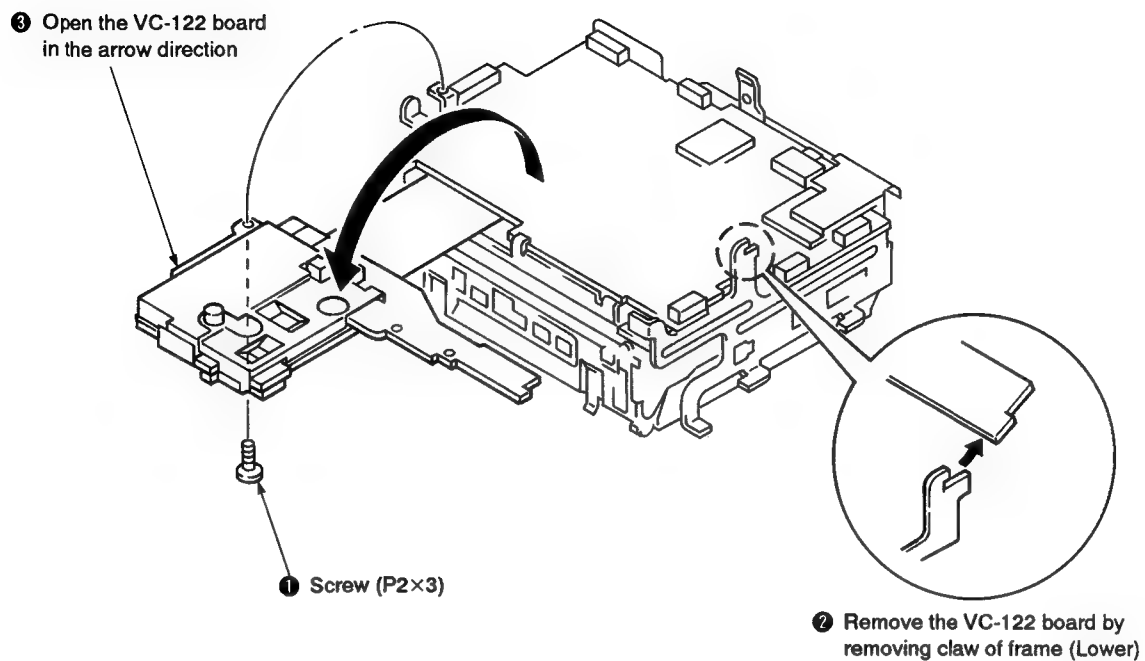
2-8. REMOVAL OF JK-91 AND AU-138 BOARDS



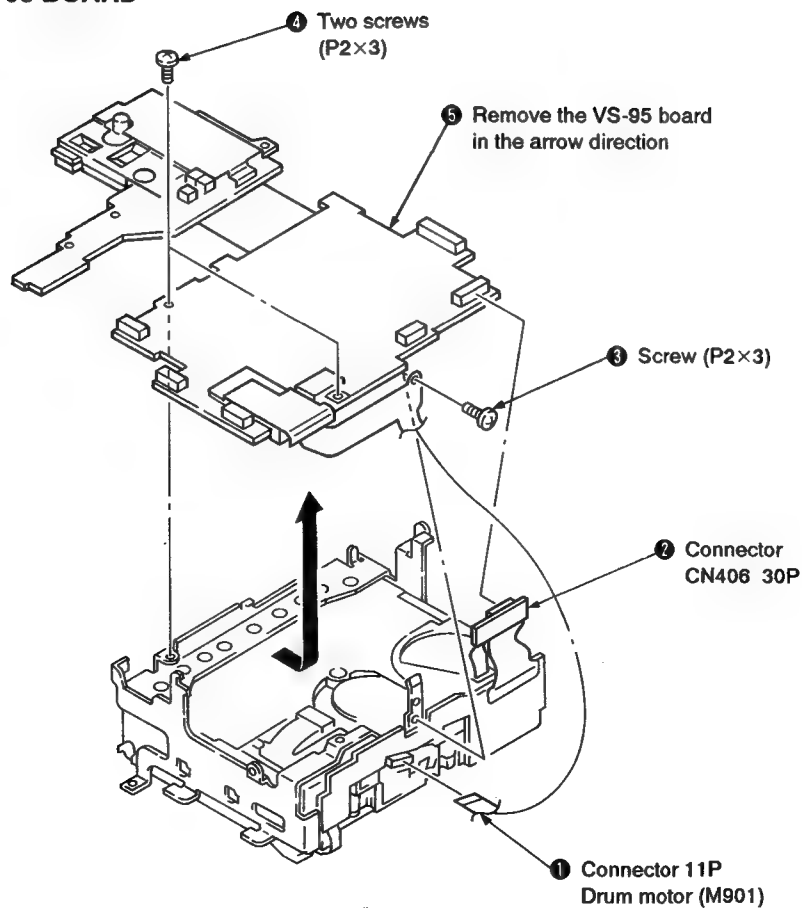
2-9. REMOVAL OF LENS ASSEMBLY (CD-92 BOARD)



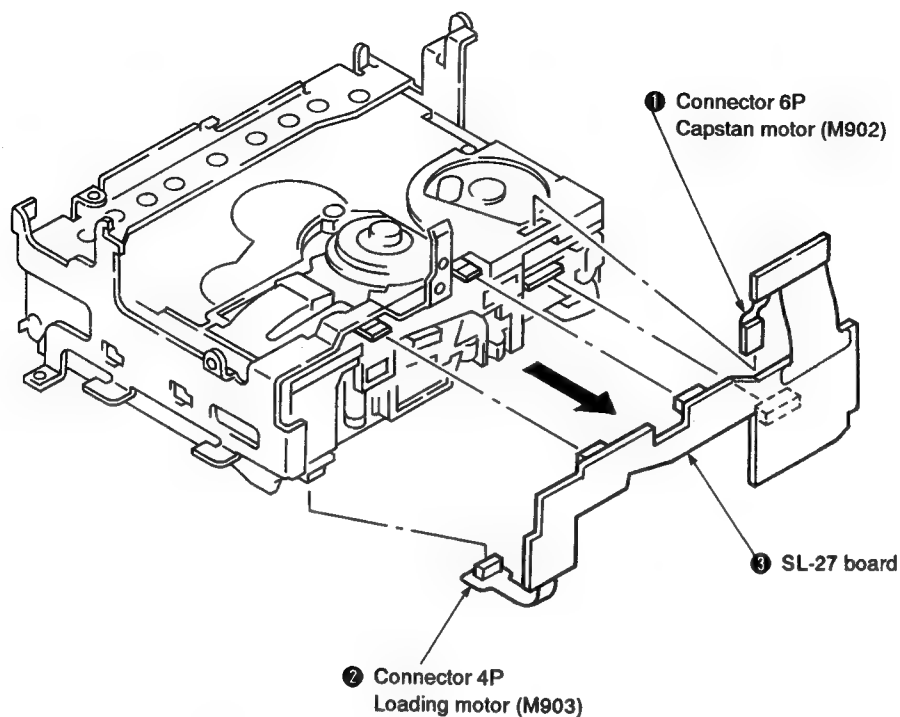
2-10. OPENING OF VC-122 BOARD



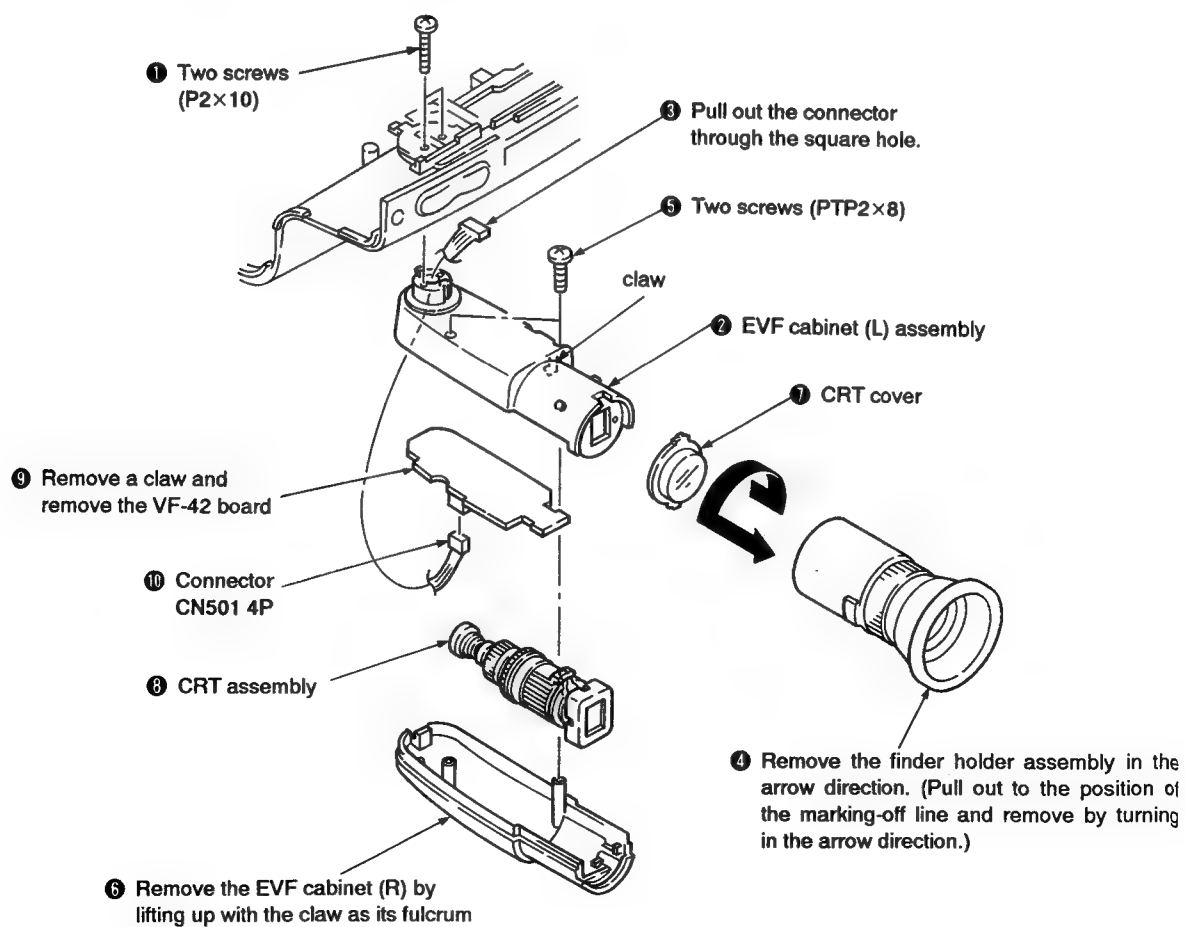
2-11. REMOVAL OF VS-95 BOARD



2-12. REMOVAL OF SL-27 BOARD

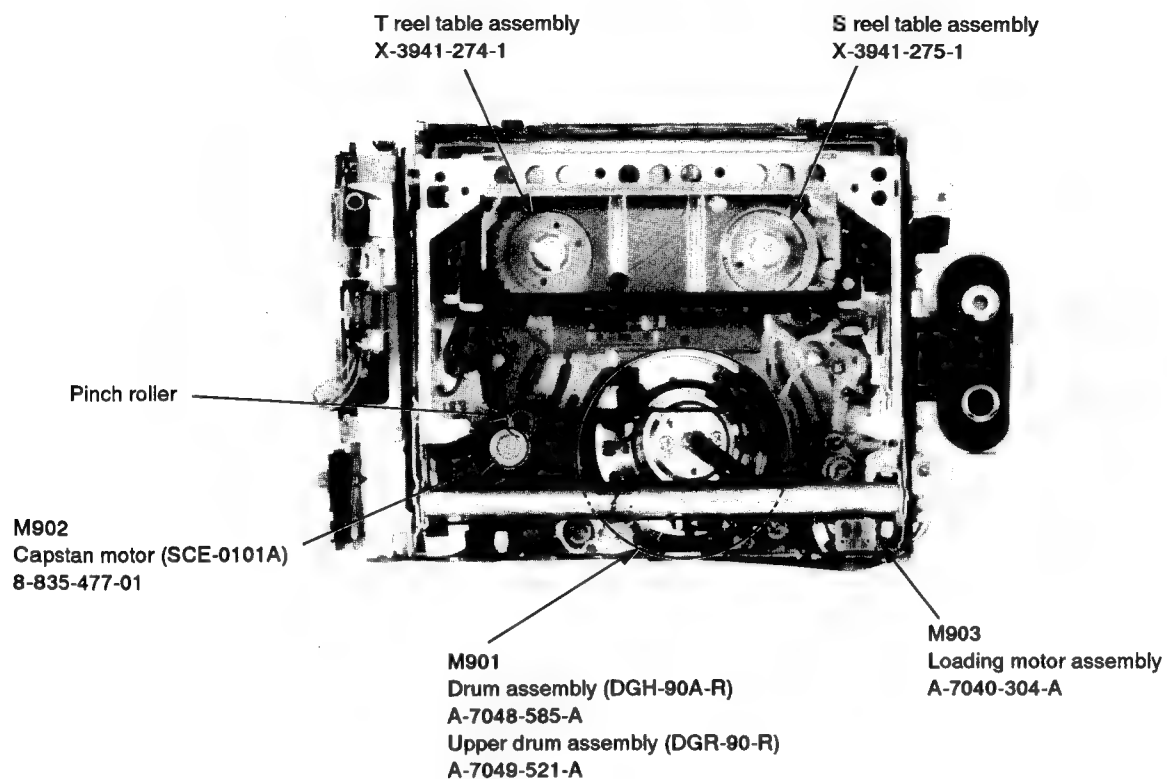


2-13. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)

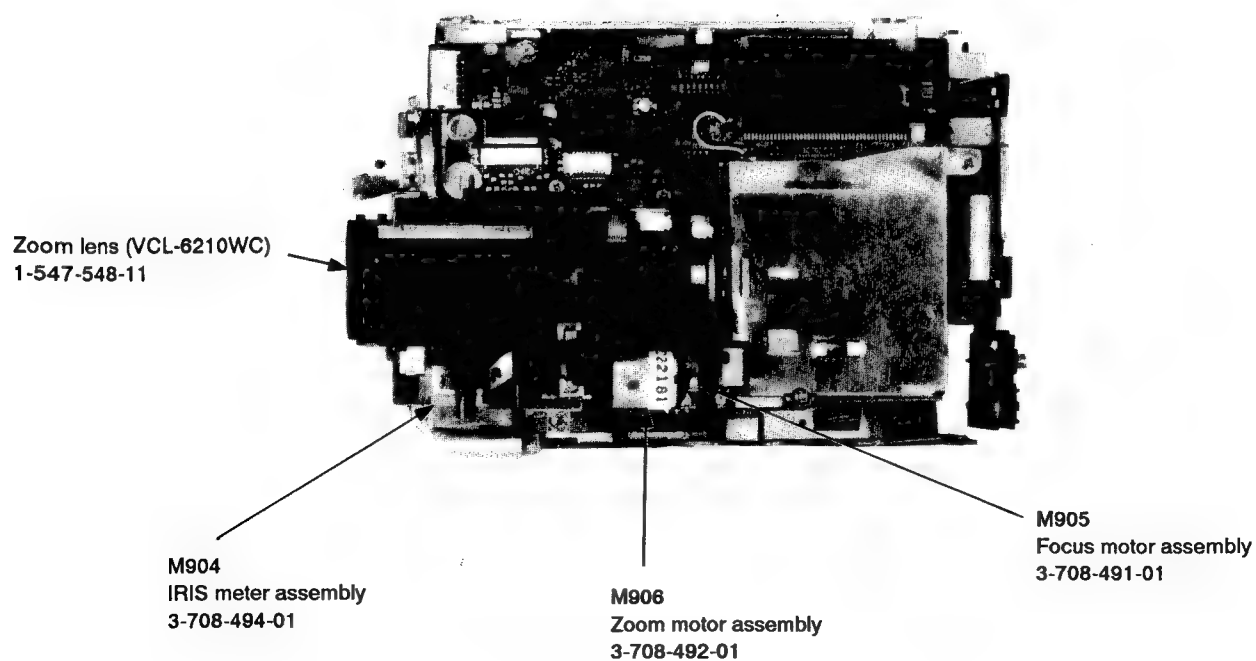


2-14. INTERNAL VIEWS

— Left side —

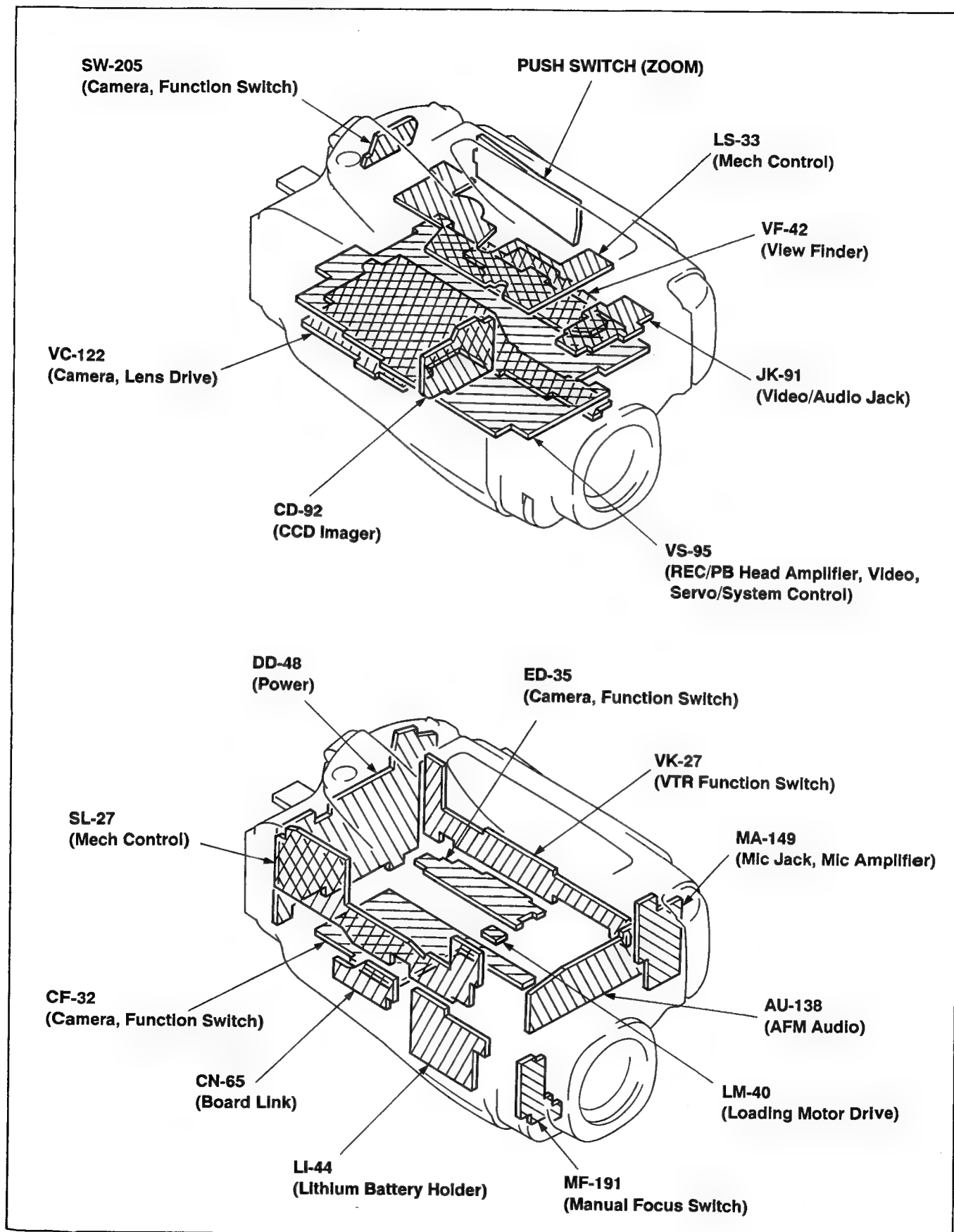


— Right side —

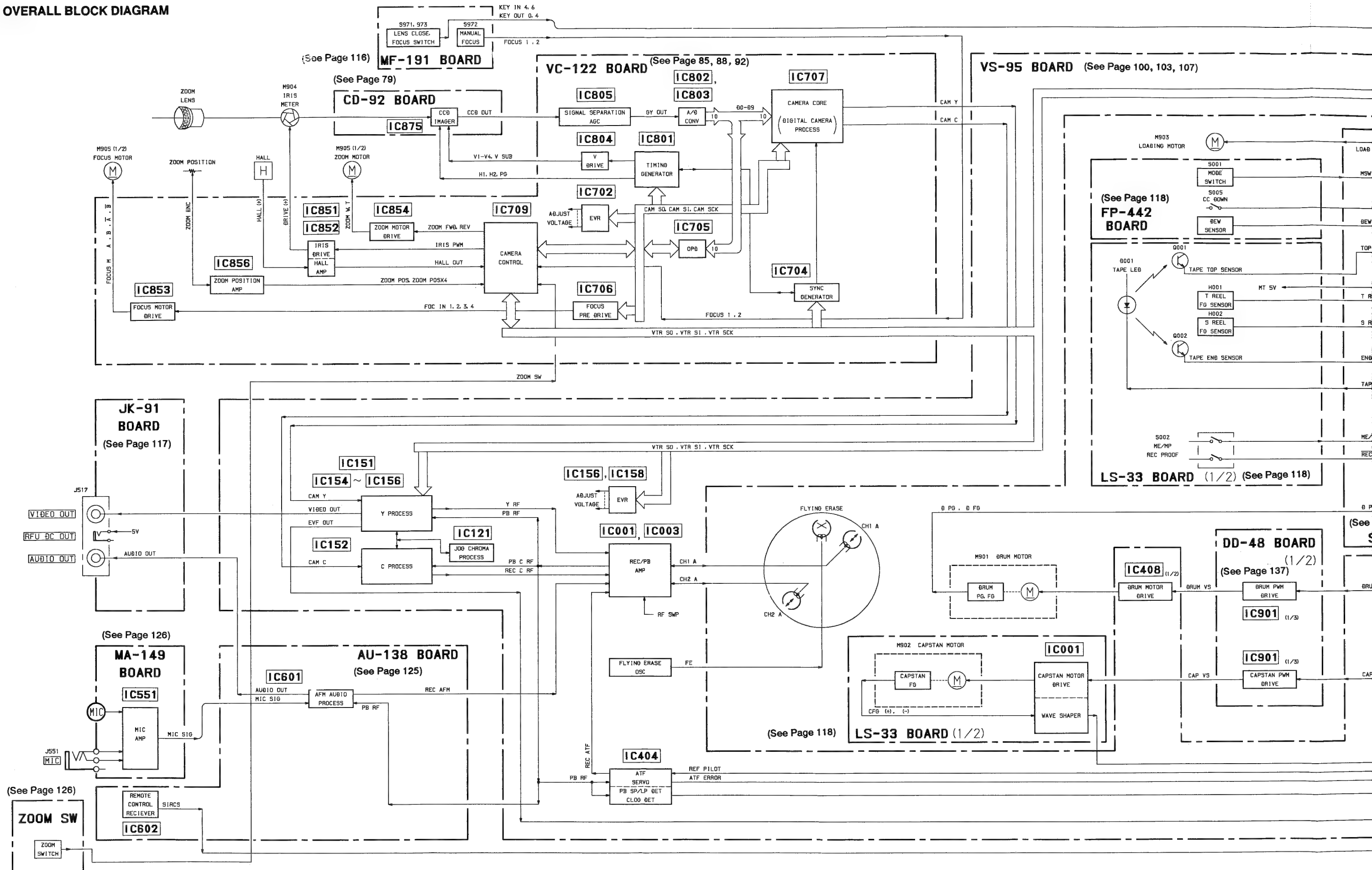


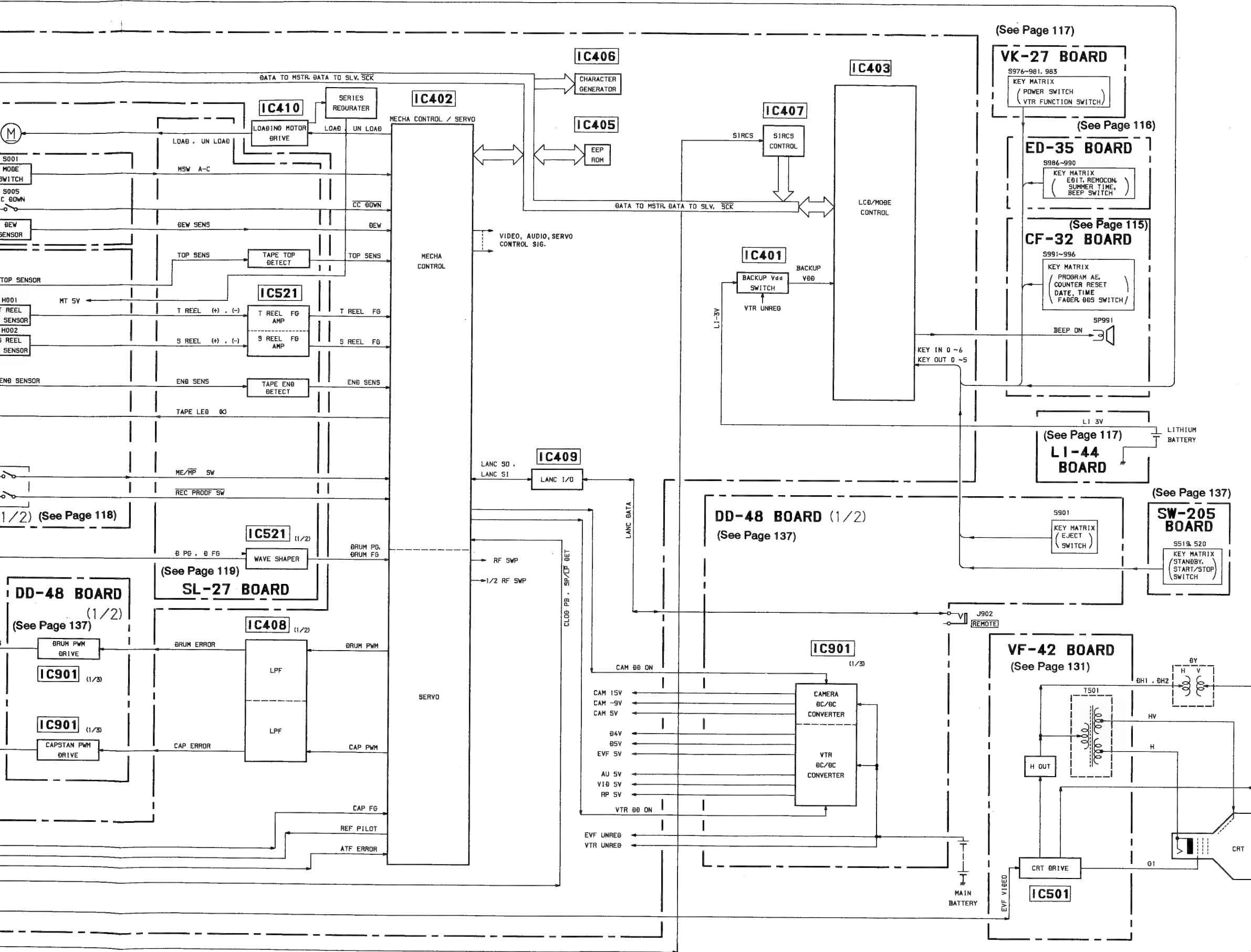
SECTION 3 DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

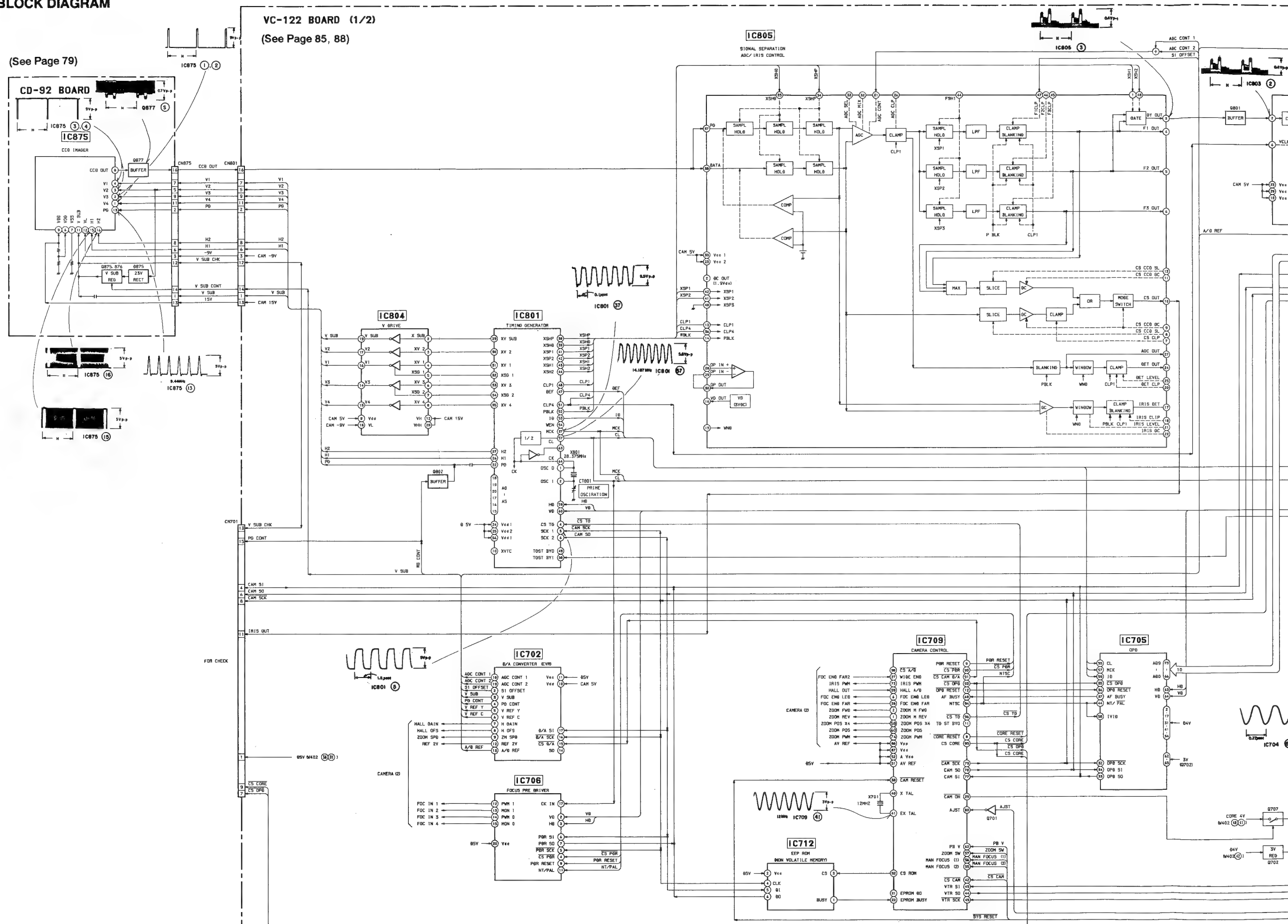


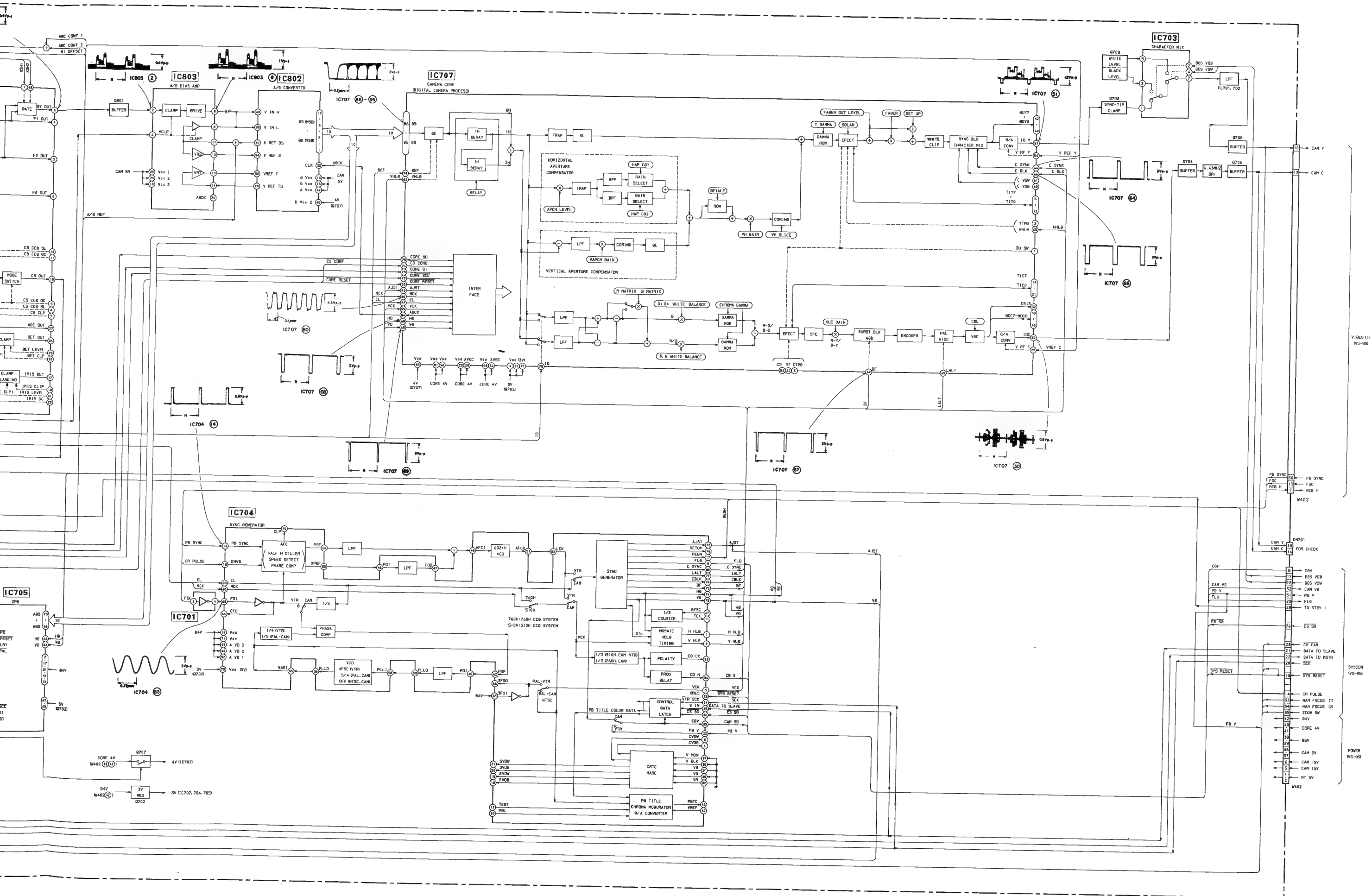
3-2. OVERALL BLOCK DIAGRAM





3-3. CAMERA (1) BLOCK DIAGRAM





3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-122 BOARD: CXP80624-424R/434R)

Pin No.	Signal	I/O	Function
1	ZOOM M REV	O	Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to WIDE. "H" when rotating to TELE.
2	ZOOM M FWD	O	Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to TELE. "H" when rotating to WIDE.
3			Not used.
4			
5			
6	FOC END LED	O	Focus end sensor LED control signal. Normally "L".
7	RT05/D5		Not used.
8	CORE RESET	O	Camera core (IC707 on VC-122 board) reset signal. Normally "H". "L" when reset.
9	PDR RESET	O	Focus predriver (IC706 on VC-122 board) reset signal. Normally "H". "L" when reset.
10			Not used.
11	TG STBY0		
12	OPD RESET	O	
13			Not used.
14			
15			
16			
17			
18			
19			
20			
21	EPROM DO	O	Connected to +5V.
22	EPROM BUSY	I	BUSY signal from EEPROM. Normally "H". "L" pulse when data reading/writing.
23			Not used.
24			
25			Connected to GND.
26			Connected to +5V.
27	WIDE END		Focus Zone sensor input. Normally "L".
28	FOC END FAR	I	Focus edge sensor input. Normally "L".
29	CAM ON	O	Power supply control signal. Normally "L".
30			Not used.
31			
32			
33			
34			
35			
36			
37	MP		Connected to GND.
38	CAM RESET	I	Reset signal input. Normally "H". "L" when reset.
39	VSS		GND
40	XTAL	O	12 MHz clock oscillation circuit.
41	EXTAL	I	
42	CS CAM	I	Chip select signal from mode control microprocessor. (IC403 on VS-95 board)
43	VTR SI	I	Serial data input from mode control microprocessor.
44	VTR SO	O	Serial data output from mode control microprocessor.
45	VTR SCK	I	Serial data transfer clock.
46			Not used.
47			
48			

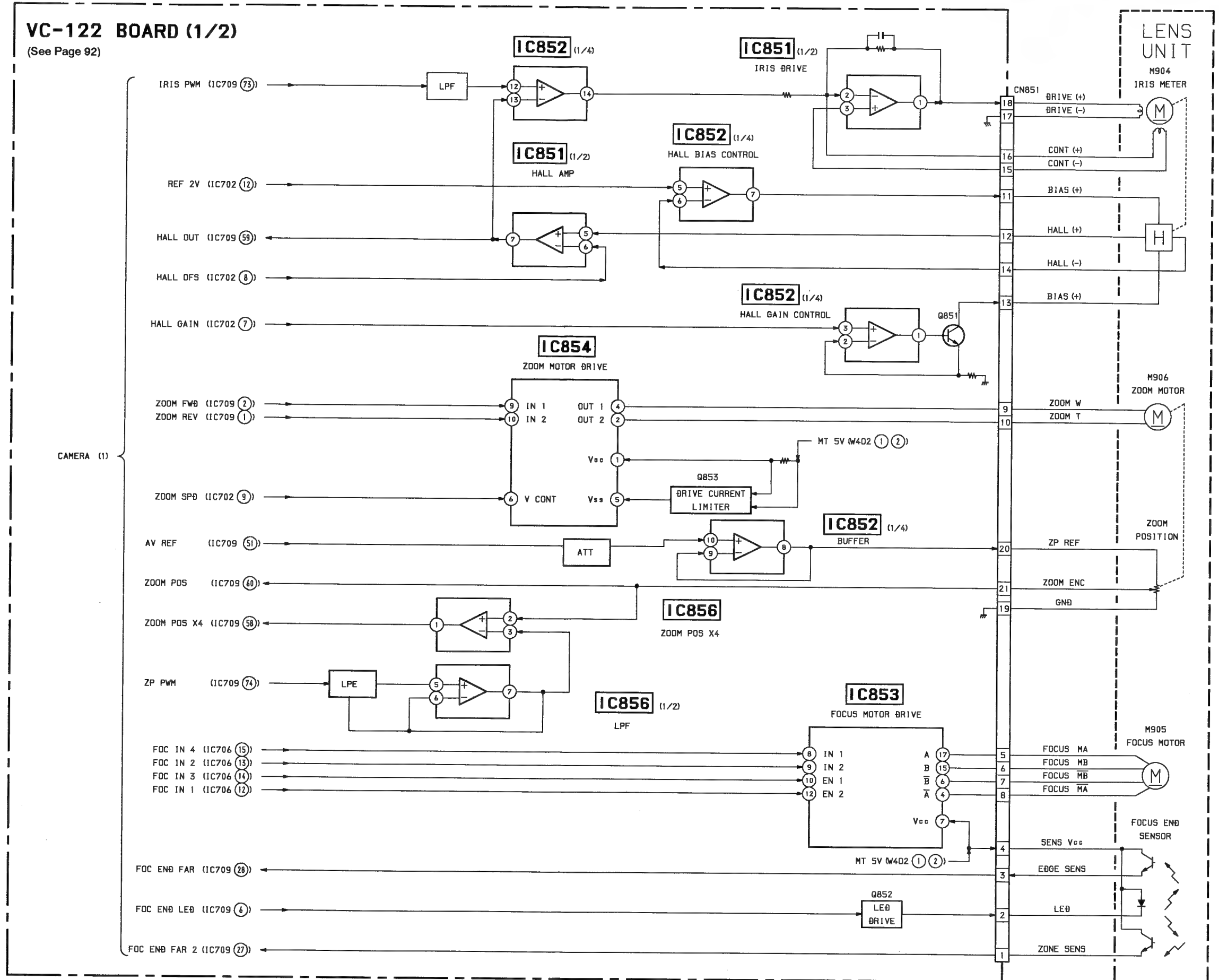
Pin No.	Signal	I/O	Function
49			Not used.
50	AVSS		GND
51	AVREF		Analog input port reference voltage (5V).
52	AVDD		Analog input port voltage (5V).
53			Connected to GND.
54			
55	MAN FOCUS (2)	I	Manual focus input. 0 to 5 Vdc.
56	MAN FOCUS (1)	I	Manual focus input. 0 to 5 Vdc.
57	ZOOM SW	I	Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input.
58	ZOOM POS X4	I	Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end).
59	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
60	ZOOM POS	I	Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end).
61			Connected to 5V.
62	PB V	I	VD signal input from mecha controller (IC402 on VS-95 board).
63	PG5/SYNC1		Connected to +5V.
64	VTR SYNC		
65	PB CTL		
66	DPG		
67			Not used.
68	AF BUSY	I	
69			
70			
71			Not used.
72			
73	IRIS PWM	O	Iris control signal. 21 μsec period PWM signal.
74	ZM PWM	O	Zoom position detection voltage output. 21 μsec period PWM signal.
75			Not used.
76			Connected to +5V.
77	CAM SI	I	Serial data input.
78	CAM SO	O	Serial data output.
79	CAM SCK	O	Serial data transfer clock.
80	AJST	I	Adjustment timing pulse input. Normally "H".
81	PI/TO		Not used.
82	PI/PWM		
83	PI/PO		Connected to +5V.
84	PI O		
85	PKO		GND
86	GND		
87	VDD		+5V power supply.
88	VPP		
89			Not used.
90	CS PDR	O	Chip select signal to focus predriver (IC706 on VC-122 board).
91	CS CAM D/A	O	Chip select signal to camera EVR (IC702 on VC-122 board).
92	CS ROM	O	Chip select signal to EEPROM (IC712 on VC-122 board).
93	CS OPD	O	Chip select signal to OPD (IC705 on VC-122 board).
94	NTSC	O	NTSC: "L", PAL: "H".
95	CS CORE	O	Chip select signal to camera core (IC707 on VC-122 board).
96	CS TG	O	Chip select signal to timing generator (IC801 on VC-122 board).
97			Not used.
98	CS A/D	O	Chip select signal to Zoom position A/D converter. Not used.
99			Not used.
100			

3-5. CAMERA (2) BLOCK DIAGRAM

(See Page 94)

VC-122 BOARD (1/2)

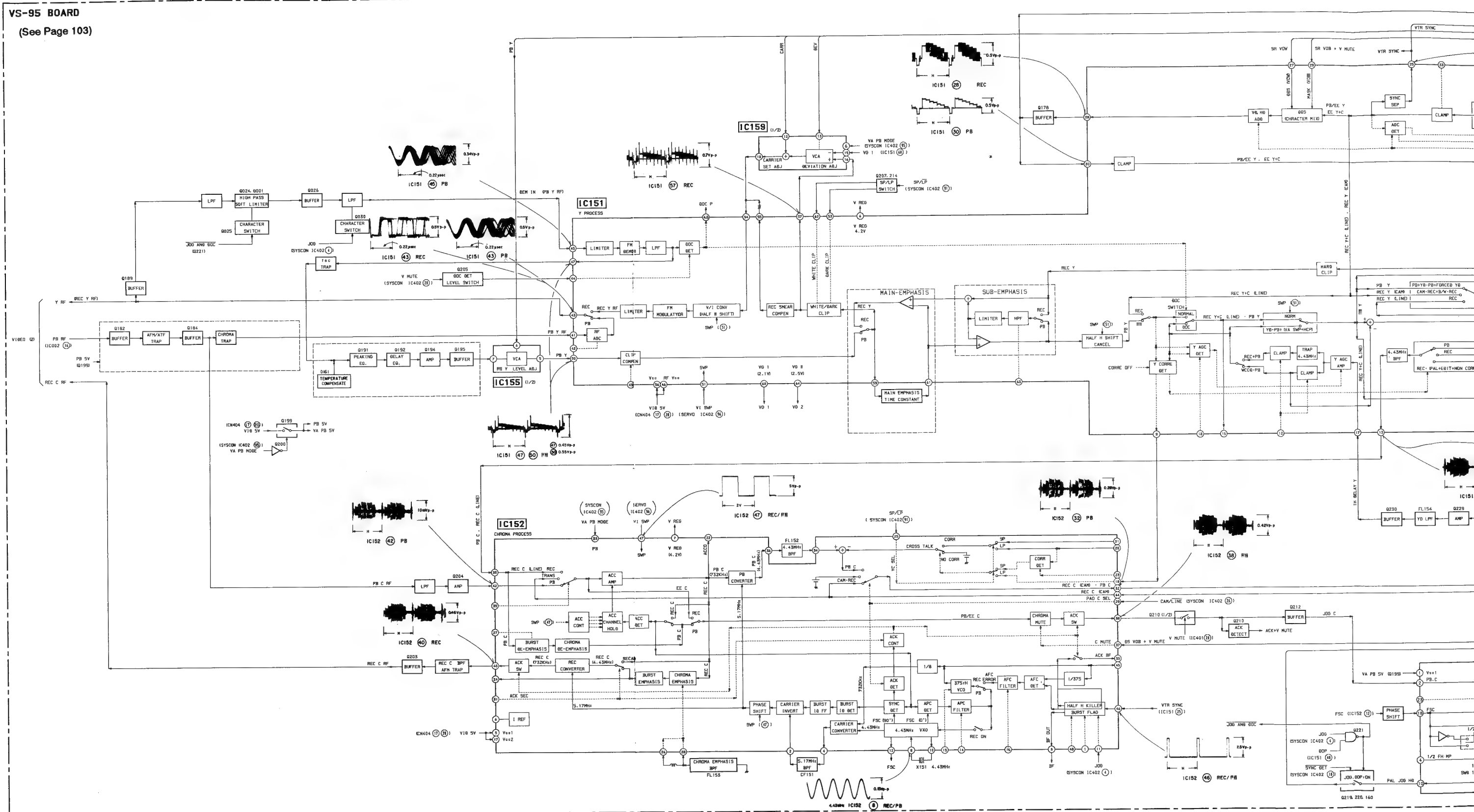
(See Page 92)



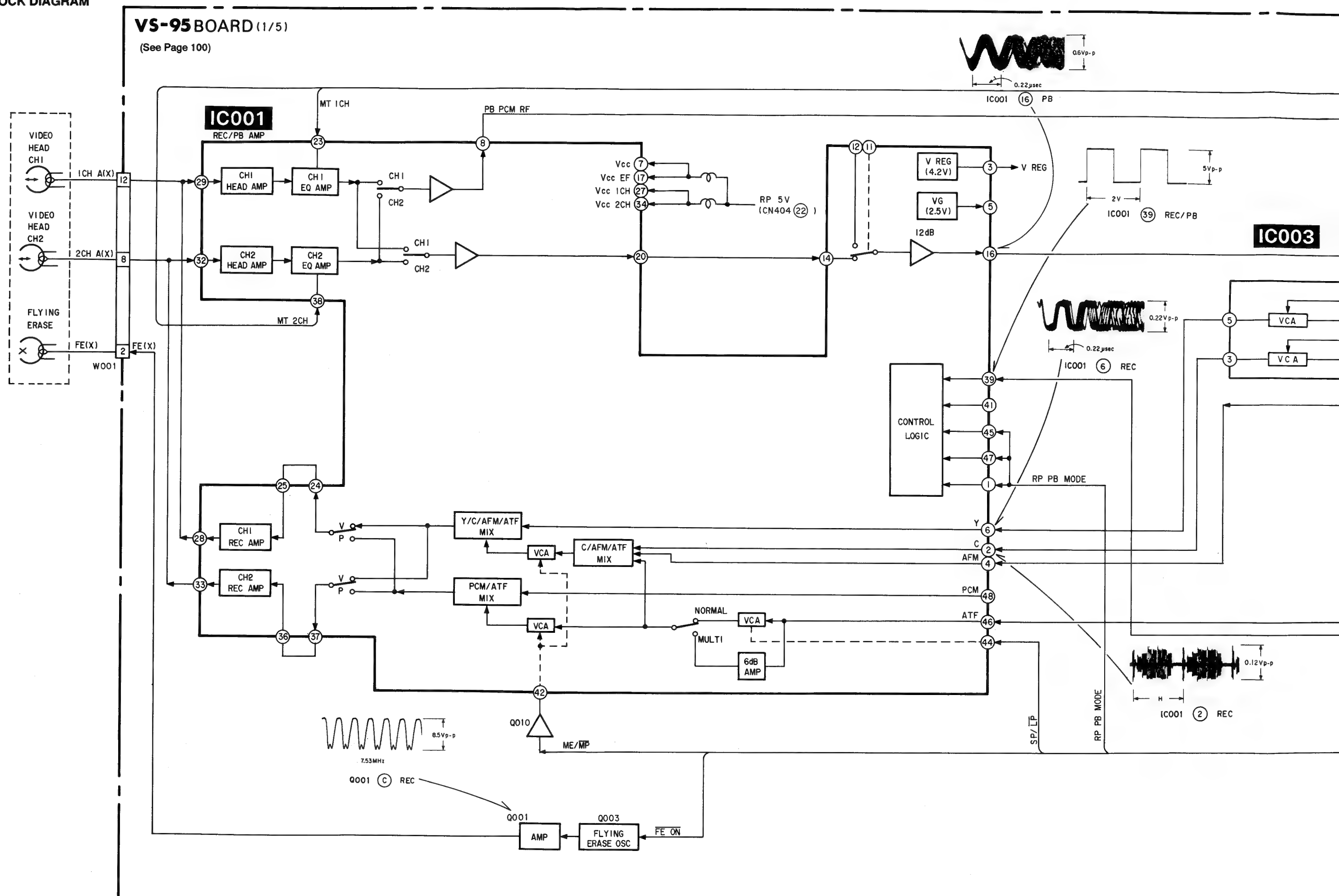
3-6. VIDEO (1) BLOCK DIAGRAM

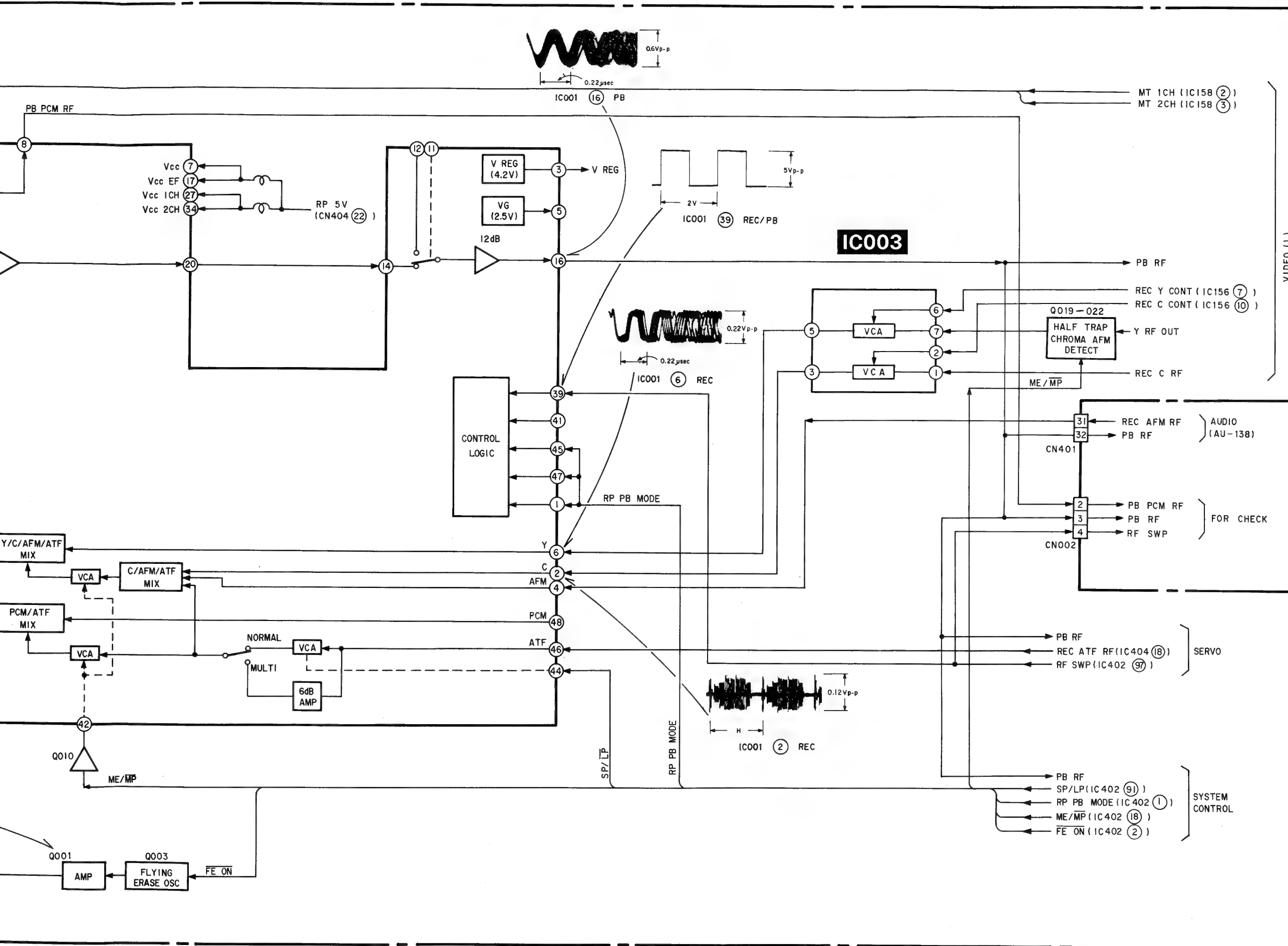
VS-95 BOARD

(See Page 103)



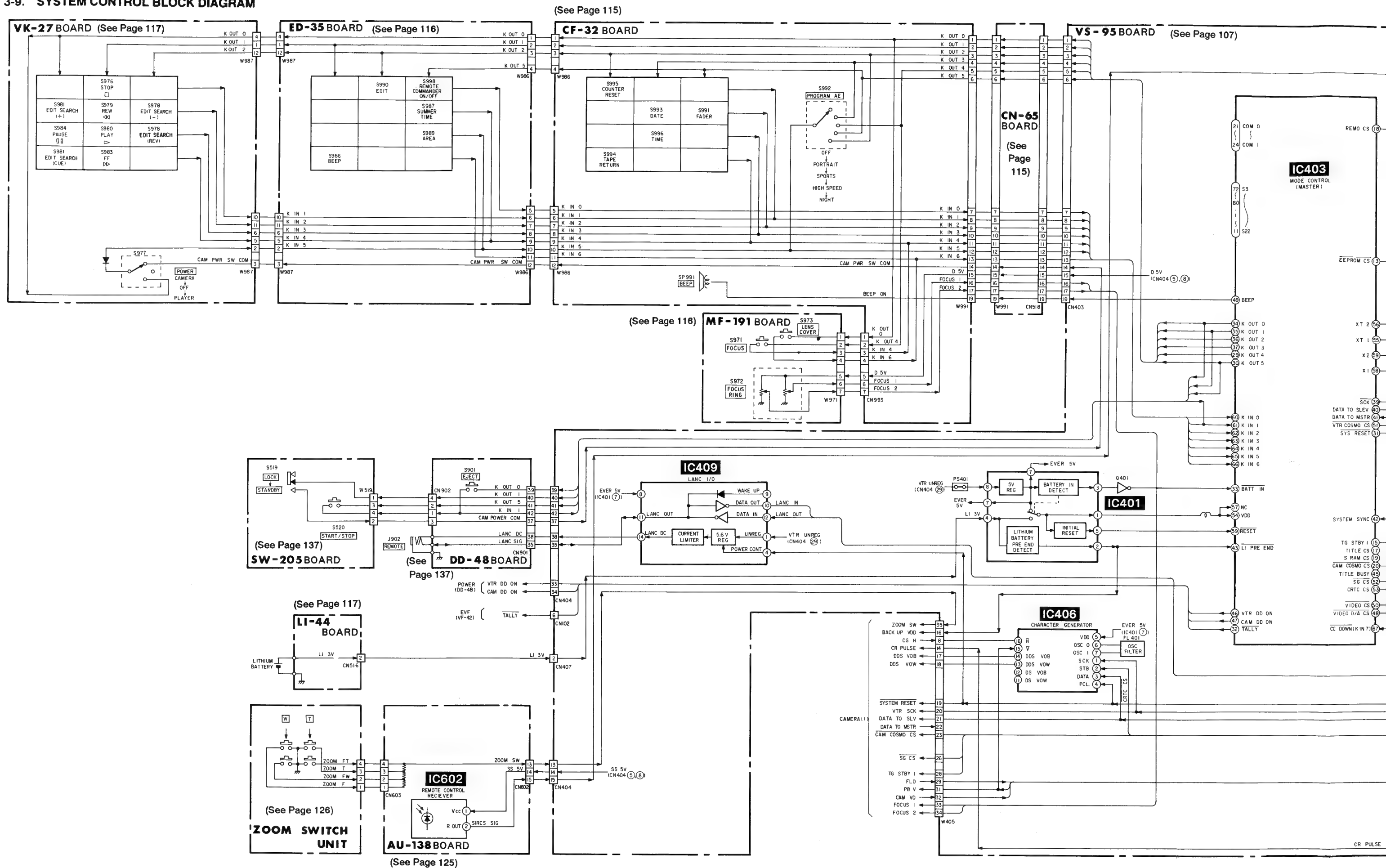
3-7. VIDEO (2) BLOCK DIAGRAM



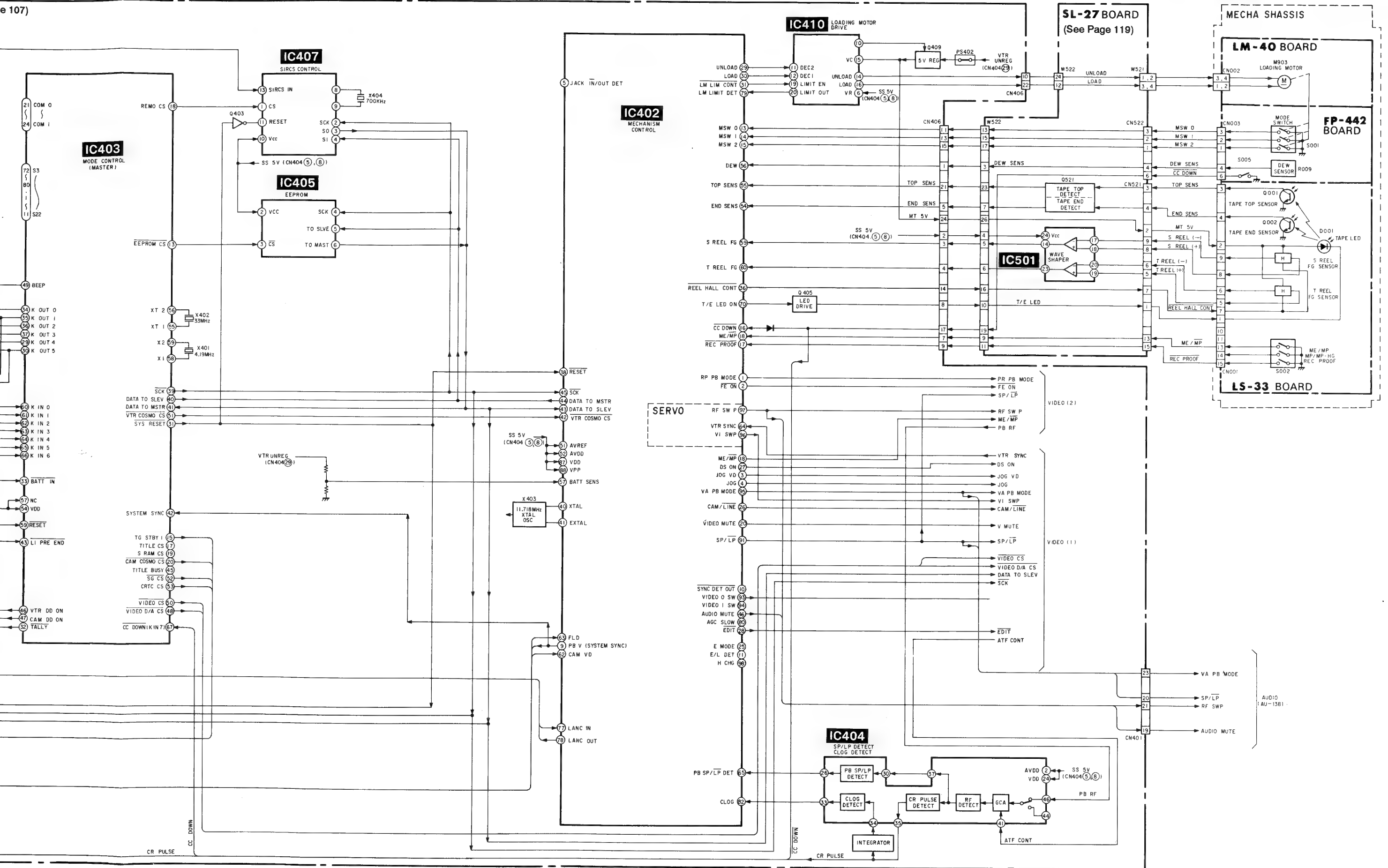




3-9. SYSTEM CONTROL BLOCK DIAGRAM



e 107)



3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-95 BOARD: CXP80624)

Pin No.	Port Name	Signal	I/O	Connection	Function																																								
1	PB3/PP011	RP PB MODE	O	VS	REC/PB select signal of REC/PB amplifier (IC001 on VS-95 board) and ATF servo IC (IC404 on VS-95 board). "H": PB.																																								
2	PB2/PP010	FE ON	O	VS	Flying erase oscillation ON/OFF control signal. "L": oscillation.																																								
3	PB1/PP09	JOG VD	O	VS	False VD signal to be inserted into playback video signal during variable speed playback.																																								
4	PB0/PP08	JOG	O	VS	Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.																																								
5	PC7/RT07	JACK IN/OUT	I	VS	Not used. Connected to +5V.																																								
6	PC6/RT06	1.7M DET	I	VS	Not used.																																								
7	PC5/RT05	JACK MONO/STE DET	I	VS																																									
8	PC4/RT04	INT VD	I																																										
9	PC3/RT03	PB V (SYSTEM SYNC)	O	MODE CON	V sync for mode controller.																																								
10	PC2/RT018	SYNC DET OUT	O	VS	Sync detect output. "L" when Sync is detected.																																								
11	PC1/RT017	E/L DET	I	VS	Not used.																																								
12	PC0/RT016	MIC MONO/ST DET	I	AU																																									
13	PJ7	M SW 0	I	MD	Mode switch input. <table><tr><td></td><td>BL</td><td>END</td><td>EJECT</td><td>USE</td><td>LOAD</td><td>READY</td><td>TURN</td><td>REC/PB</td><td>FF</td></tr><tr><td>M SW 0</td><td>L</td><td>L</td><td>L</td><td>H</td><td>L</td><td>H</td><td>H</td><td>L</td><td>L</td></tr><tr><td>M SW 1</td><td>L</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td>H</td><td>L</td></tr><tr><td>M SW 2</td><td>L</td><td>H</td><td>H</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td></tr></table>		BL	END	EJECT	USE	LOAD	READY	TURN	REC/PB	FF	M SW 0	L	L	L	H	L	H	H	L	L	M SW 1	L	H	L	L	L	L	H	H	L	M SW 2	L	H	H	H	H	L	L	L	L
	BL	END	EJECT	USE		LOAD	READY	TURN	REC/PB	FF																																			
M SW 0	L	L	L	H		L	H	H	L	L																																			
M SW 1	L	H	L	L	L	L	H	H	L																																				
M SW 2	L	H	H	H	H	L	L	L	L																																				
14	PJ6	M SW 1	I	MD																																									
15	PJ5	M SW 2	I	MD																																									
16	PJ4	CC DOWN	I	MD	Cassette compartment down switch input. "L": down.																																								
17	PJ3	REC PROOF	I	MD	Erase protection switch input. "L" when REC prohibit.																																								
18	PJ2	ME/MP	I	MD	ME/MP switch input. "L": MP, "H": ME.																																								
19	PJ1	HG/NOR	I	MD	Connected to GND.																																								
20	PJ0	VIDEO MUTE	O	VS	Video output mute signal. "H": mute.																																								
21	PD7	LINE MIX	I	VS	Not used.																																								
22	PD6	MAT SEL 1	I	VS																																									
23	PD5	MAT SEL 2	I	VS																																									
24	PD4	MAT ON/OFF	O	VS																																									
25	PD3	E MODE	O	VS																																									
26	PD2	CAM/LINE	O	VS	Camera input/line input select signal. "H" when camera input.																																								
27	PD1	DS ON	O	VS	Data screen ON/OFF signal. "H": ON.																																								
28	PD0	EDIT	O	VS	Video circuit EDIT/NORMAL switch signal. "L": EDIT.																																								
29	PH7	UNLOAD	O	VS	Loading motor control signal. "H" or "H" pulse when unloading.																																								
30	PH6	LOAD	O	VS	Loading motor control signal. "H" or "H" pulse when loading.																																								
31	PH5	LM LIM COM	O	VS	Loading motor limiter control signal. Temporary "H" when loading.																																								
32	PH4	COMP REC	O	VS	Not used.																																								
33	PH3	DRUM REV	O	VS	Drum rotating control signal . Normally "L".																																								
34	PH2		O		N.C.																																								
35	PH1		O																																										
36	PH0	REEL HALL CONT	O	VS	Reel FG sensor (HALL element) power supply control signal.																																								
37	MP	MP			Connected to GND.																																								
38	RST	RESET	I	MODE CON	Reset signal from mode control microprocessor. "L" when reset.																																								
39	VSS	VSS			GND																																								
40	XTAL	XTAL	I	VS	11.89 MHz clock oscillation circuit.																																								
41	EXTAL	EXTAL	O	VS																																									
42	CSO	VTR COSMO CS	I	MODE CON	Chip select signal from mode control microprocessor (VS-95 board IC403)																																								
43	S10	DATA TO SLVE	I	MODE CON	Serial data input from mode control microprocessor.																																								
44	S00	DATA TO MSTR	O	MODE CON	Serial data output to mode control microprocessor.																																								
45	SCKO	SCK	I	MODE CON	Serial clock input from mode control microprocessor.																																								

Pin No.	Port Name	Signal	I/O	Connection	Function
46	PF7/AN11	AUDIO MUTE	O	VS	Audio output mute signal. "H": mute.
47	PF6/AN10	1.7M OFF	O	VS	Not used.
48	PF5/AN9	GND	I		GND
49	PF4/AN8	GND	I		
50	AVSS	AVSS			Analog port GND.
51	AVREF	AVREF			Analog port reference voltage. Connected to +5V.
52	AVDD	VDD			Analog port power supply (5V).
53	PF3/AN7	N.C.			Connected to GND.
54	PF2/AN6	END SENS	I	VS	Tape end detection signal. Normally "L", "H" pulse: tape end.
55	PF1/AN5	TOP SENS	I	VS	Tape top detection signal. Normally "L", "H" pulse: tape top.
56	PF0/AN4	DEW	I	VS	Dew condensation detection signal. "L" when dew condensation.
57	AN3	BATT SENSE	I	VS	Battery voltage input for battery end detection. 1/2 divided by RB401.
58	AN2	ATF ERROR	I	VS	ATF error, ATF lock error input.
59	AN1	S REEL FG	I	VS	S reel FG signal input.
60	AN0	T REEL FG	I	VS	T reel FG signal input.
61	PG7/EX11	PG7 (N.C.)			Connected to GND.
62	PG6/EX10	CAM VD	I	CAM SG	VD signal from camera circuit sync generator. V period pulse.
63	PG5/SYNC1	FLD	I	CAM SG	FIELD signal from camera circuit sync generator. 2V period pulse.
64	PG4/SYNC0	VTR SYNC	I	VS	Composite sync signal separated from REC/PB Y signal.
65	PG3/PBCTL	PB SP/LP DET	I	VS	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
66	PG2/DPG	DRUM PG	I	VS	Drum PG signal input. For drum phase servo 40 msec period "H" pulse.
67	PG1/DFG	DRUM FG	I	VS	Drum FG signal input. For drum speed servo 3.3 msec period pulse.
68	PG0/CFG	CAP FG	I	MD	Capstan FG signal input. For capstan speed servo. Approx. 1388 Hz when REC/PB (SP).
69	PE7/DAB0	N.C.	O		N.C.
70	PE6/DAB0	T/E LED ON	O	VS	Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB.
71	PE5/DAA1	N.C.	O		N.C.
72	PE4/DAA0	N.C.	O		
73	PE3/PWM1	CAP PWM	O	VS	Capstan error signal output 20.15 μ sec PWM signal.
74	PE2/PWM0	DRUM PWM	O	VS	Drum error signal output 20.15 μ sec PWM signal.
75	PE1/EC/INT2	C FG	I	MD	Capstan FG signal input. For tape counter.
76	PE0/INT0	S JACK IN			Not used, connected to +5V.
77	P17/ST1	LANC IN	I	VS	Control L serial data input.
78	P16/SO1	LANC OUT	O	VS	Control L serial data output.
79	P15/SCK1	LM LIMIT DET	I	VS	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
80	P14/INT1	AGC SLOW			Not used.
81	P13/TO	DRUM ON	O	VS	Drum driver ON/OFF control signal. "H" when drum ON.
82	P12/PWM	CLOG	O	VS	Head clog detection signal. "L" when no trouble.
83	P11/PO	REF PILOT	O	VS	ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
84	P10/PCK				Connected to +5V.
85	PKO	13/10 SW	I	MD	Not used.
86	VSS	VSS			GND
87	VDD	VDD			VDD
88	N.C.	(VPP)			Connected to +5V.
89	PA7/PP07	DRUM ACC	O	VS	Drum motor acceleration signal. Not used.

Pin No.	Port Name
90	PA6
91	PA5
92	PA4
93	PA3
94	PA2
95	PA1
96	PA0
97	PB7
98	0
99	11
100	PB6

Pin No.	Port Name	Signal	I/O	Connection	Function
90	PA6/PP06	DRUM BRK	O	VS	Drum motor brake signal. Normally "L".
91	PA5/PP05	SP/LP	O	VS	SP/LP select signal. "L": LP.
92	PA4/PP04	AU IN/OUT	O		Not used.
93	PA3/PP03	VIDEO O SW	O	VS	VIDEO OUT inhibit signal. "H": inhibit.
94	PA2/PP02	VIDEO I SW	O	VS	VIDEO IN/OUT select signal. Not used.
95	PA1/PP01	VA PB MODE	O	ALL	Video/audio circuit REC/PB select signal. "H": PB.
96	PA0/PP00	VI SWP	O	VS	RF switching pulse signal for video circuit. 25 Hz, 50% duty pulse.
97	PB7/PP015	RF SWP	O	ALL	RF switching pulse signal for REC/PB amp and Audio circuit. 25 Hz, 50% duty pulse.
98	0	H CHG	O	VS	Not used.
99	11	CAP ON	O	MD	Capstan driver ON/OFF control signal. "H" when capstan ON.
100	PB4/PP012	CAP FWD/RVS	O	MD	Capstan rotating direction control signal. "H": FWD, "L": RVS.

3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-95 BOARD: μ PD75316)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
2	S13	S13	O		
3	S14	S14	O		
4	S15	S15	O		
5	S16	S16	O		
6	S17	S17	O		
7	S18	S18	O		
8	S19	S19	O		
9	S20	S20	O		
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	EEPROM CS	O		Chip select signal to EEPROM (IC406 on VS-95 board). 1/2V period "L" pulse.
14	S25/BP1	N.C	O		Not used.
15	S26/BP2	TG STBY 1	O	CAM	Power save control signal to timing generator (IC801 on VC-122 board). Normally "L".
16	S27/BP3		O		N.C.
17	S28/BP4	CS TITLE	O	CAM	Not used.
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller (IC907 on VS-95 board). 1V period "L" pulse.
19	S30/BP6	S RAM CS	O		Not used.
20	S31/BP7	CAM COSM CS	O	CAM	Chip select signal to camera controller (IC709 on VC-122 board). 1V period "L" pulse.
21	COM0	COM 0	O		Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
22	COM1	COM 1	O		
23	COM2	COM 2	O		
24	COM3	COM 3	O		
25	BIAS	BIAS	O		Bias voltage output for voltage deviding resistor. Not used.
26	VLC0	VCC 0	I		Power source 0 input
27	VLC1	VCC 1	I		Power source 1 input
28	VLC2	VCC 2	I		Power source 2 input
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	SYS RESET	O	all	
32	P43	TALLY	O	EVF	Output signal to reset each IC when power is turned on. Normally "H".
33	VSS	VSS			Tally LED ON/OFF signal. "L": ON.
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	BATT IN	I		Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select.
39	P01/SCK	SCK	O	all	Serial clock output terminal, Serial clock (2 μ S) communication.
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μ S) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μ S) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-95 board).

Pin No.	Port Name	Signal	I/O	Connection	Function
43	P11/INT1	$\overline{\text{LI PRE END}}$	I		(Edge detection vector interruption), Lithium PRE END is selected with "L".
44	P12/INT2	$\overline{\text{LANC PWR ON}}$	I		Power on signal input from wired remote control. "L" when power switch pressed.
45	P13/TIO	TITLE BUSY	I	CAM	Not used.
46	P20/PT00	VTR DD ON	O	PS	VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position.
47	P21	CAM DD ON	O	PS	CAMERA power source (CAM 5V, +15V, -9V) control signal. "H" when power switch is in "CAMERA" position.
48	P22/PCL	$\overline{\text{VIDEO D/A CS}}$	O	VA	Serial data load signal to video circuit EVR (IC156, 158 on VS-95 board). 1V period "H" pulse.
49	P23/BUZ	BEEP	O		Buzzer output. Normally "L". 2 kHz pulse: alarm.
50	P30/LCDCL	$\overline{\text{VIDEO CS}}$	O	VA	Chip select signal to Y process IC (IC151 on VS-95 board). 1V period "L" pulse.
51	P31/SYNC	$\overline{\text{VTR COSM CS}}$	O		Chip select signal to mechanism controller (IC402 on VS-95 board). 1V period "L" pulse.
52	P32	$\overline{\text{SG CS}}$	O	CAM	Chip select signal to sync generator (IC704 on VC-122 board). 1V period "L" pulse.
53	P33	$\overline{\text{CRTC CS}}$	O	CAM	Strobe signal for character generator (IC406 on VS-95 board). 1V period "H" pulse.
54	VDD	VDD			VDD
55	XT1	XT1	I		SUB system clock. 32 kHz oscillation terminal.
56	XT2	XT2			
57	N.C.	N.C.			N.C.
58	X1	X1	I		Main system clock. 4.19 MHz oscillation terminal.
59	X2	X2	I		
60	P60/KK0	K IN 0	I	all	KEY matrix input. 1V period "L" pulse input when corresponding key is pressed. "H" when other case.
61	P61/KR1	K IN 1	I	all	
62	P62/KR2	K IN 2	I	all	
63	P63/KR3	K IN 3	I	all	
64	P70/KR4	K IN 4	I	all	
65	P71/KP5	K IN 5	I	all	
66	P72/KP6	K IN 6	I	all	
67	P73/KP7	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment lock switch input. "L": Lock.
68	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I		System reset input. "L": Reset, Normally: "H".
69	S0	CLK CHK	O		N.C.
70	S1	S1	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
71	S2	S2	O		
72	S3	S3	O		
73	S4	S4	O		
74	S5	S5	O		
75	S6	S6	O		
76	S7	S7	O		
77	S8	S8	O		
78	S9	S9	O		
79	S10	S10	O		
80	S11	S11	O		

3-12. INTERFACE

3-12-1. System Control – Video/Audio Block Interface (VS-95 BOARD)

NAME	I/O	No.	VTR MODE										
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW
						CUE	REVIEW		CUE	REVIEW			
SP/LP	O	IC402 ㉑	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1
VA PB MODE	O	IC402 ㉕	L	L	L	H	H	H	H	H	H	H	H
AUDIO MUTE *13	O	IC402 ㉞	L	L	L	H	H	L	H	H	H	H	H
VIDEO MUTE	O	IC402 ㉟	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15
CAM/LINE	O	IC402 ㊱	L	L	L	L	L	L	L	L	L	L	L
JOG VD	O	IC402 ㊳	L	L	L	*5	*5	L	*5	*5	*5	*5	*5
RP PB MODE	O	IC402 ㊴	H	H	H	H	H	H	H	H	H	H	H
FE ON	O	IC402 ㊵	H	H	H	H	H	H	H	H	H	H	H
RF SWP	O	IC402 ㊶	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC402 ㊷	L	L	L	H	H	L	H	H	H	H	H
$\overline{\text{VIDEO CS}}$	O	IC403 ㊸	V period "L"										
$\overline{\text{VIDEO D/A CS}}$	O	IC403 ㊹	V period "H"										
DATA TO MSTR	I	IC403 ㊺	V period "L"										
DATA TO SLVE	O	IC403 ㊻	V period pu										
$\overline{\text{SCK}}$	I	IC403 ㊼	V period "H"										
PB SP/LP DET	I	IC402 ㊽	L	*10	*10	*10	*10	L	*10	*10	*10		
CLOG	I	IC402 ㊾	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11
VTR SYNC	I	IC402 ㊿	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

- *1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
 *2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
 *3. Edit search button pressed when playback pause mode.
 *4. Mode for adjustment.
 *5. False VD signal
 *6. By REC MODE switch, "H": SP mode, "L": LP mode.
 *7. 25 Hz duty 50% pulse (synchronized with drum rotation)

- *10. "H": SP recording
 *11. "H": no recording
 *12. Composite sync signal
 video signal. (polarized)
 *13. "H" during camera
 *14. "L" when external
 *15. "H" when tape no

3-12. INTERFACE

3-12-1. System Control – Video/Audio Block Interface (VS-95 BOARD)

NAME	I/O	No.	VTR MODE																CAMERA MODE							
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB- PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW			
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS		
SP/LP	O	IC402 ㉔	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	*2	*2		
VA PB MODE	O	IC402 ㉕	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H		
AUDIO MUTE *13	O	IC402 ㉖	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H		
VIDEO MUTE	O	IC402 ㉗	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15		
CAM/LINE	O	IC402 ㉘	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L		
JOG VD	O	IC402 ㉙	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5		
RP PB MODE	O	IC402 ㉚	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H		
FE ON	O	IC402 ㉛	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H		
RF SWP	O	IC402 ㉜	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7		
JOG	O	IC402 ㉝	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H		
VIDEO CS	O	IC403 ㉞	V period "L" pulse																							
VIDEO D/A CS	O	IC403 ㉟	V period "H" pulse																							
DATA TO MSTR	I	IC403 ㊱	V period "L" pulse																							
DATA TO SLVE	O	IC403 ㊲	V period pulse train																							
SCK	I	IC403 ㊳	V period "H" pulse																							
PB SP/LP DET	I	IC402 ㊴	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10		
CLOG	I	IC402 ㊵	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11		
VTR SYNC	I	IC402 ㊶	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12		

- *1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
 *2. Outputs discrimination result of the playback tape. "H": SP mode, "L": LP mode.
 *3. Edit search button pressed when playback pause mode.
 *4. Mode for adjustment.
 *5. False VD signal
 *6. By REC MODE switch, "H": SP mode, "L": LP mode.
 *7. 25 Hz duty 50% pulse (synchronized with drum rotation)

- *10. "H": SP recording area on tape. "L": LP recording area.
 *11. "H": no recording area or drop out area on tape. Head clog detection input.
 *12. Composite sync input separated from line input video signal, camera video signal or playback video signal. (polarity +)
 *13. "H" during camera mode load/unload.
 *14. "L" when external input (video) present. "H" when other cases.
 *15. "H" when tape no signal. "L" when other cases.

3-12-2. System Control – Servo Block Interface

NAME	I/O	No.	VTR MODE															CAMERA MODE						
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC402 ㉔	—	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	—	—	*1	*1	*1	*1	*1
S.REEL FG	I	IC402 ㉕	—	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	—	—	*1	*1	*1	*1	*1
ATF ERROR	I	IC402 ㉖	—	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC402 ㉗	—	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC402 ㉘	—	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC402 ㉙, ㉚	—	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC402 ㉛	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC402 ㉜	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM REV *10	O	IC402 ㉝	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ RVS	O	IC402 ㉞	L	H	L	H	L	H	H	L	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC402 ㉟	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC402 ㊱	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
LM LIM CONT *11	O	IC402 ㊲	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC402 ㊳	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Inputting waveform which is similar to sine wave according to reel rotation.

*2. ATF error voltage input

*3. One PG pulse input per one drum rotation, approx. 25 Hz.

*4. 12 FG pulses input per one drum rotation, approx. 300 Hz.

*5. 520 FG pulses input per one capstan rotation. Approx. 1388 Hz when REC/PB (SP). 694 Hz when PB (LP).

*6. Four frequencies output synchronized with drum rotation. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.

*7. f2 (117.2 kHz) output

*8. "H" pulse when tape run.

*9. 21.5 μsec period PWM signal

*10. Normally "H". Temporary "L" when load (drum reverse rotation).

*11. Temporary "H" when cassette loading (finger catch protection).

*12. "H": approx. 1.3 Vdc

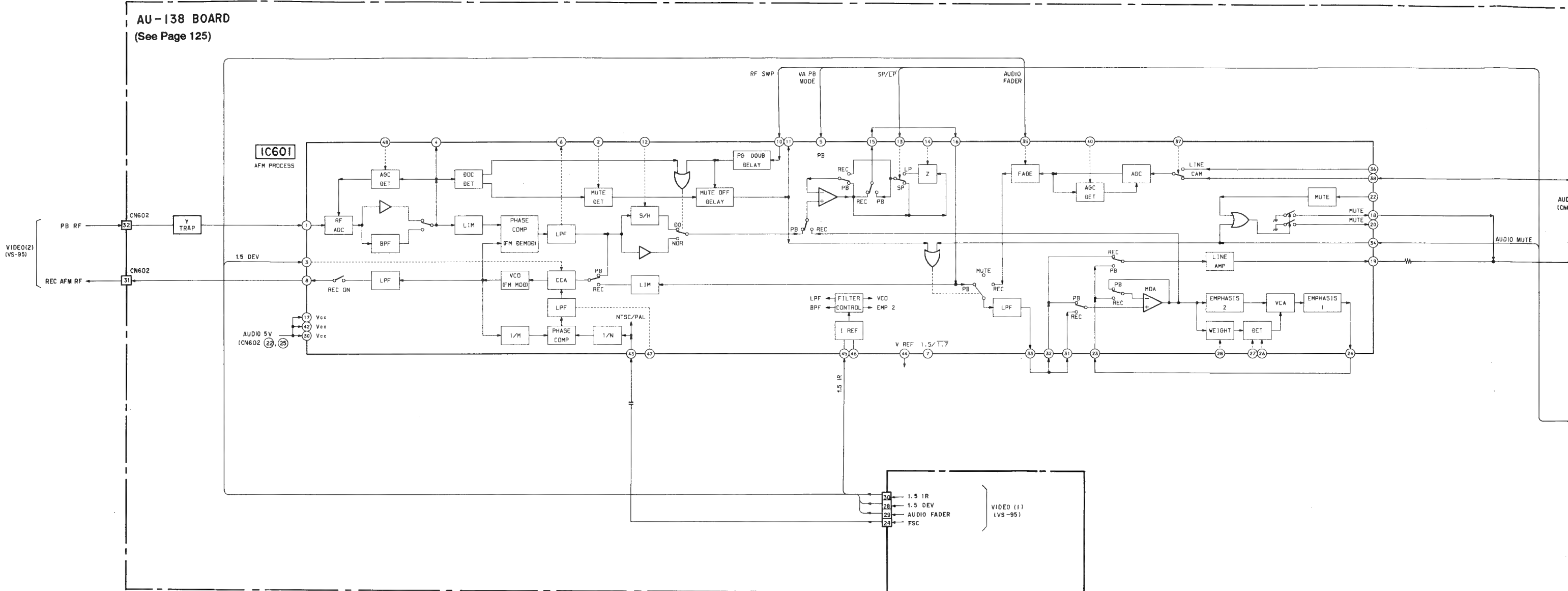
*13. Edit search button pressed when playback pause mode.

*14. Mode for adjustment.

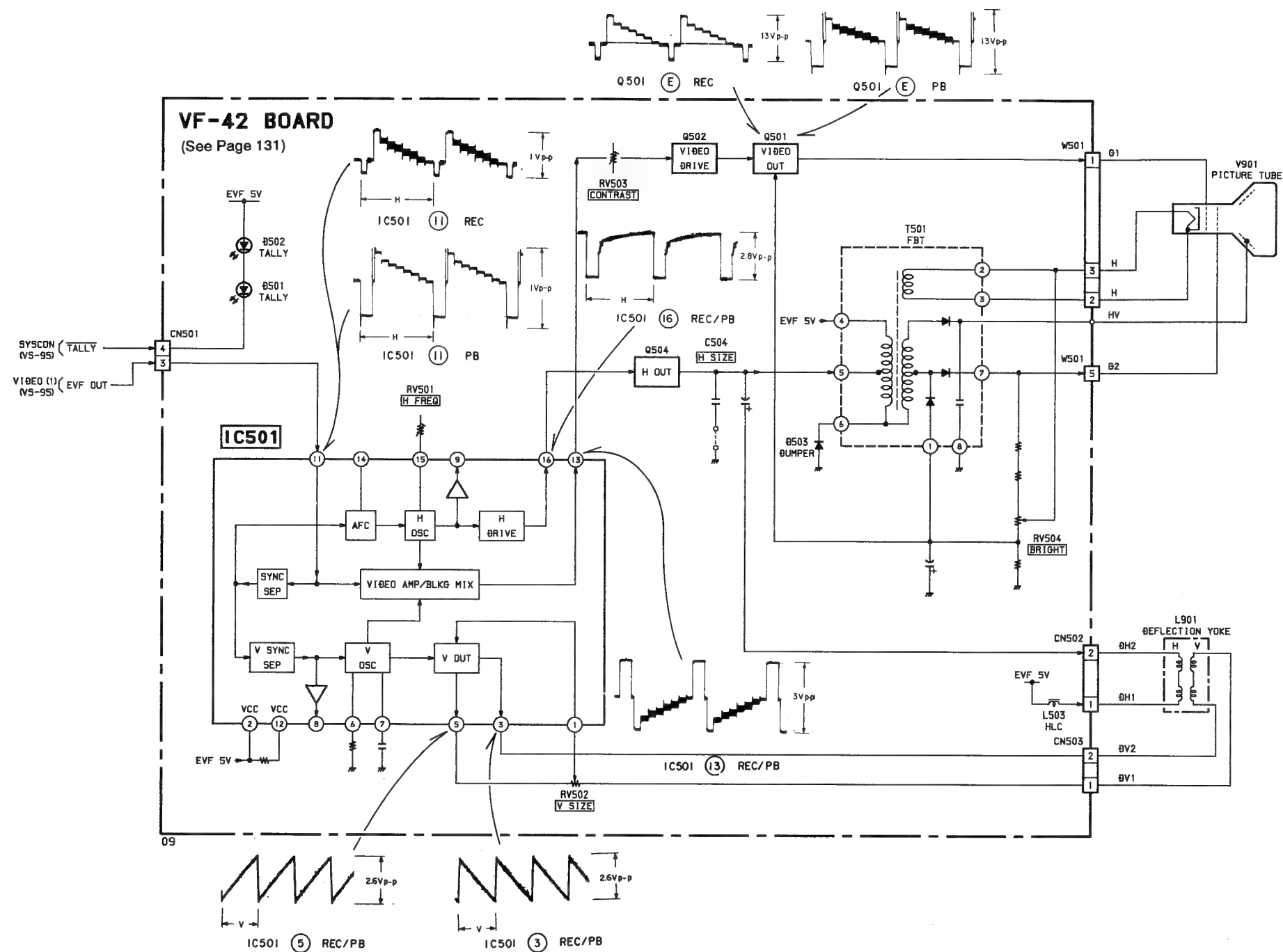
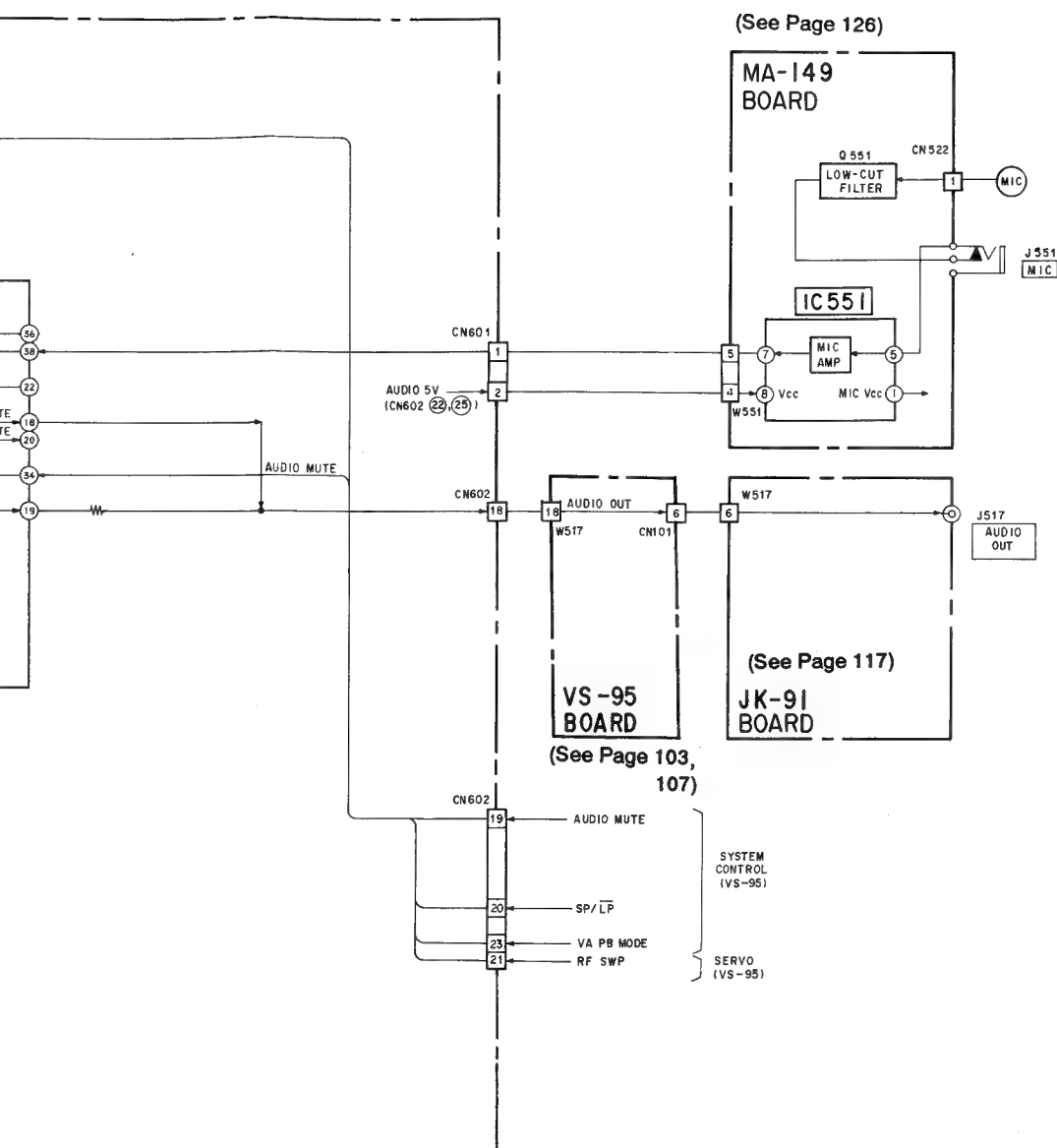
TR MODE									CAMERA MODE					
ARCH VIEW	PB- PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
					FWD	REV					FWD	RVS	FWD	RVS
1	*1	*1	*1	*1	*1	*1	*1	—	—	*1	*1	*1	*1	*1
1	*1	*1	*1	*1	*1	*1	*1	—	—	*1	*1	*1	*1	*1
2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
	H	H	H	H	H	H	L	H	H	L	H	H	H	H
	H	H	H	H	H	H	H	H	H	H	H	H	H	H
	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	H	H	H	H	H	H	H	H	H	H	H	H	H	H

- *7. f2 (117.2 kHz) output
- *8. "H" pulse when tape run.
- *9. 21.5 μ sec period PWM signal
- *10. Normally "H". Temporary "L" when load (drum reverse rotation).
- *11. Temporary "H" when cassette loading (finger catch protection).
- *12. "H": approx. 1.3 Vdc
- *13. Edit search button pressed when playback pause mode.
- *14. Mode for adjustment.

3-13. AUDIO BLOCK DIAGRAM

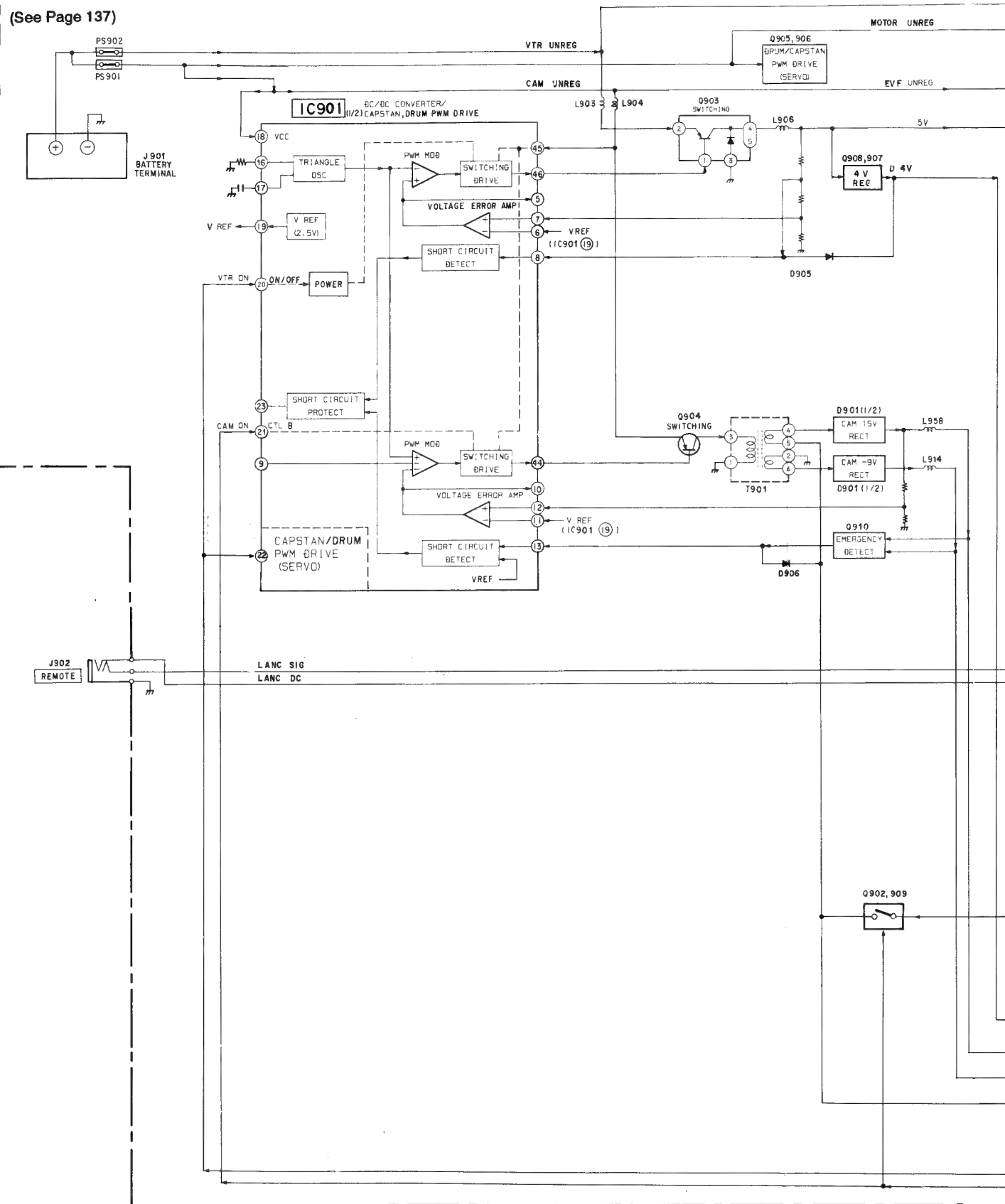


3-14. EVF BLOCK DIAGRAM



3-15. POWER BLOCK DIAGRAM

DD-48 BOARD (1/3)
(See Page 137)



(See Page 137)

SW-205 BOARD

LOCK — STANDBY

W519

CN902

K OUT 1

CAM PWR SW COM

MOTOR UNREG

VTR UNREG

LANC SIG

LANC DC

VID 5V

RP 5V

EVF UNREG

EVF 5V

AU 5V

D 5V

D 4V

CAM 15V

CAM -9V

CAM 5V

CORE 4V

VTR DD ON

CAM DD ON

CN901

(See Page 118)

MECHA CHASSIS

IC001

CAPSTAN MOTOR DRIVE

TOP, END SENSOR REEL FG

CN521

W522

DFG, DPG AMP

REEL FG AMP

SS 5V

MT UNREG

IC405

EEP ROM

IC406

CHARACTER GENERATOR

IC408

DRUM MOTOR DRIVE

IC402

SERVO/ MECHA CONTROL

IC401

BATTERY IN DETECT

INITIAL RESET

LITHIUM BATTERY PRE-ENG DETECT

BACK UP VDD

Q401

5V REG

VR

IC410

LOADING MOTOR DRIVE

5V REG

IC409

LANC I/O

LANC OUT

LANC DC

CURRENT LIMITER

5.6V UNREG

PWR CONT

EVER 5V WAKE UP

IC001

IC003

IC601

IC603

IC601

IC603

IC601

IC603

IC601

IC603

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IC601

IC603

IC601

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IC603

(See Page 119)

SL-27 BOARD

IC521

DFG, DPG AMP

REEL FG AMP

CN521

W522

SS 5V

MT UNREG

IC405

EEP ROM

IC406

CHARACTER GENERATOR

IC408

DRUM MOTOR DRIVE

IC402

SERVO/ MECHA CONTROL

IC401

BATTERY IN DETECT

INITIAL RESET

LITHIUM BATTERY PRE-ENG DETECT

BACK UP VDD

Q401

5V REG

VR

IC410

LOADING MOTOR DRIVE

5V REG

IC409

LANC I/O

LANC OUT

LANC DC

CURRENT LIMITER

5.6V UNREG

PWR CONT

EVER 5V WAKE UP

IC001

IC003

IC601

IC603

IC601

IC603

IC601

IC603

IC601

IC603

IC601

IC603

IC601

IC603

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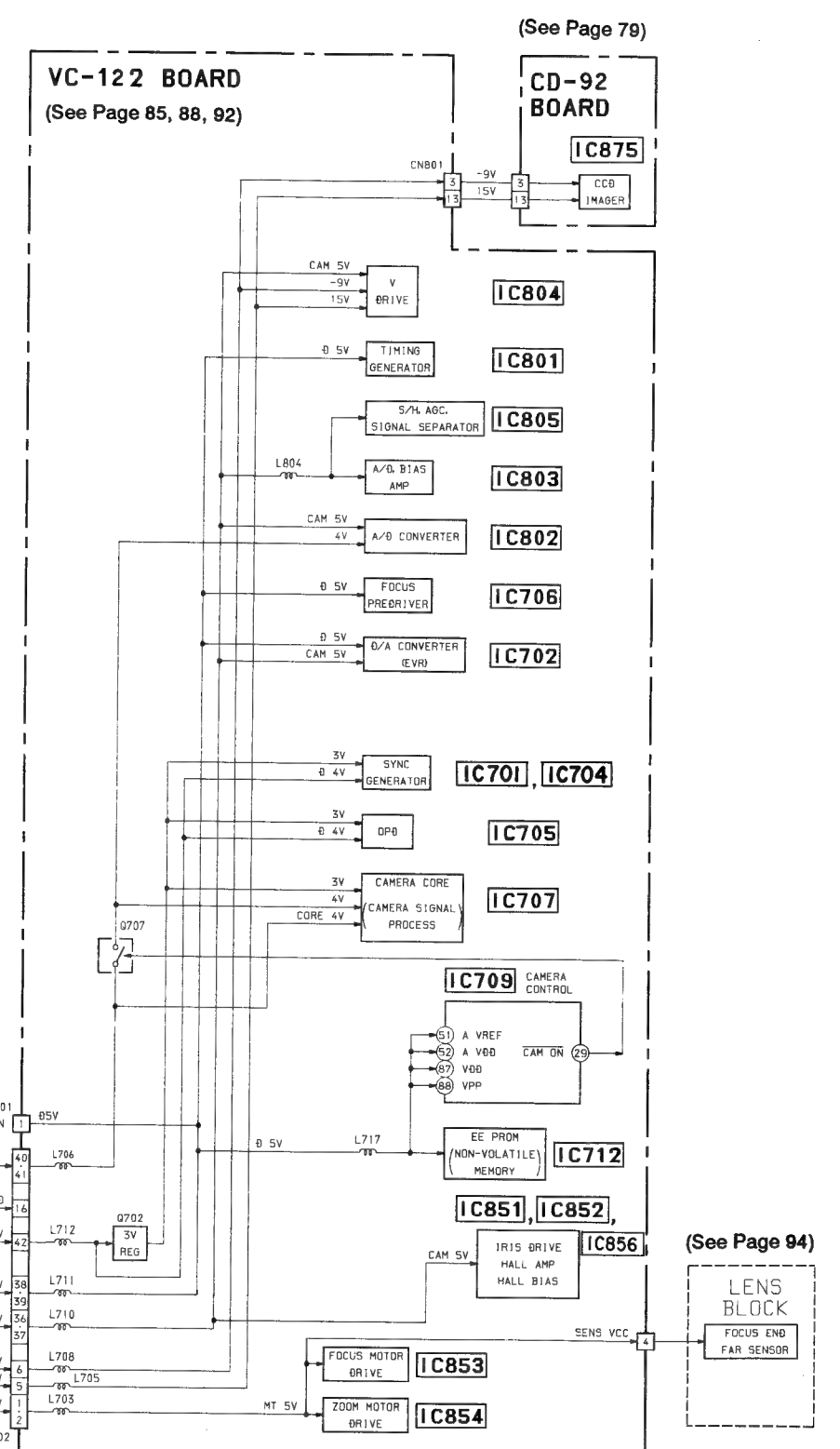
IC603

IC601

IC603

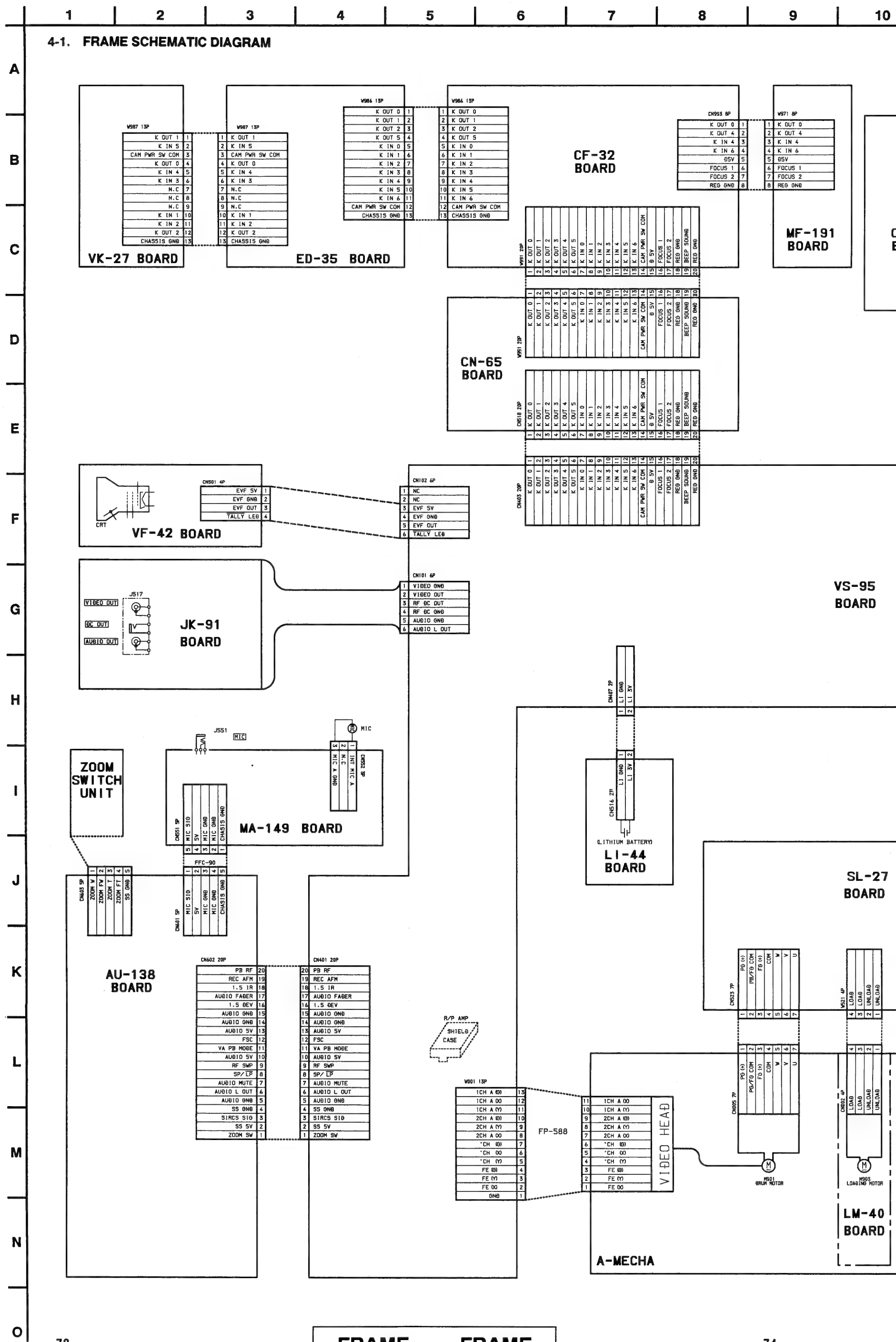
(See Page 125)

AU-138 BOARD



SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS





4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

• For printed wiring boards.

- : indicated a lead wire mounted on the component side.
- : indicated a lead wire mounted on the conductor side.
- : Parts mounted on the conductor side.
- : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- : Through hole.

* Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)
Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Component side)

• For schematic diagrams.

- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
Chip resistor are 1/10W unless otherwise noted.
kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μF.
- 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊞ : nonflammable resistor.
- ⊞ : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.*
- : B+ Line.*
- : B- Line.*
- ⇒ : IN/OUT direction of (+, -) B LINE.*
- Circled numbers refer to waveforms.*

Note:

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

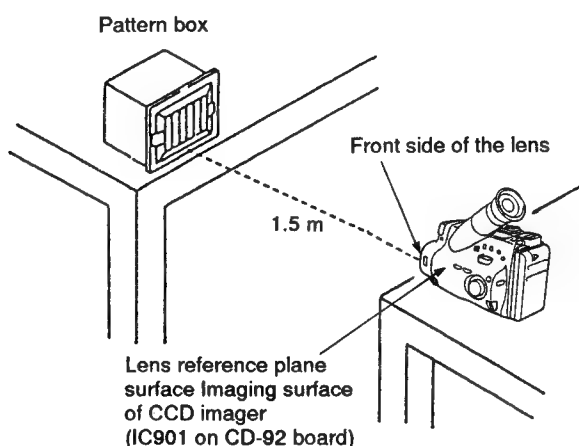
*: indicated by the color red.

• Measuring conditions voltage value and waveform.

(CAMERA, DIGITAL TITLE block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.*
Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

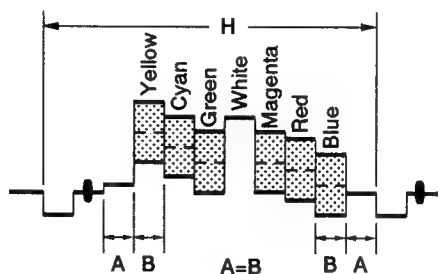


Fig. a (Video output terminal output waveform)

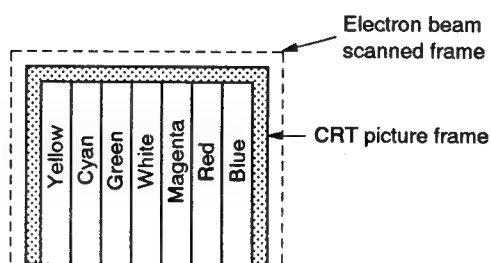


Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, VIEW FINDER block)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

CD-92 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-92 BOARD: 1000 series —

• For printed wiring boards.

- CD-92 board is the printed wiring board which has structure but inner two layers' patterns are omitted.
- : Through hole is omitted.

Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)
Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Component side)

(DIODE)

D875	8-719-800-76	DIODE	1SS123
D876	8-719-404-46	DIODE	MA110
D877	8-719-820-05	DIODE	1SS181
D878	8-719-404-46	DIODE	MA110

(TRANSISTOR)

Q875	8-729-425-64	TRANSISTOR	2SD2216Q
Q876	8-729-427-72	TRANSISTOR	XP4501
Q877	8-729-232-86	TRANSISTOR	2SK1875

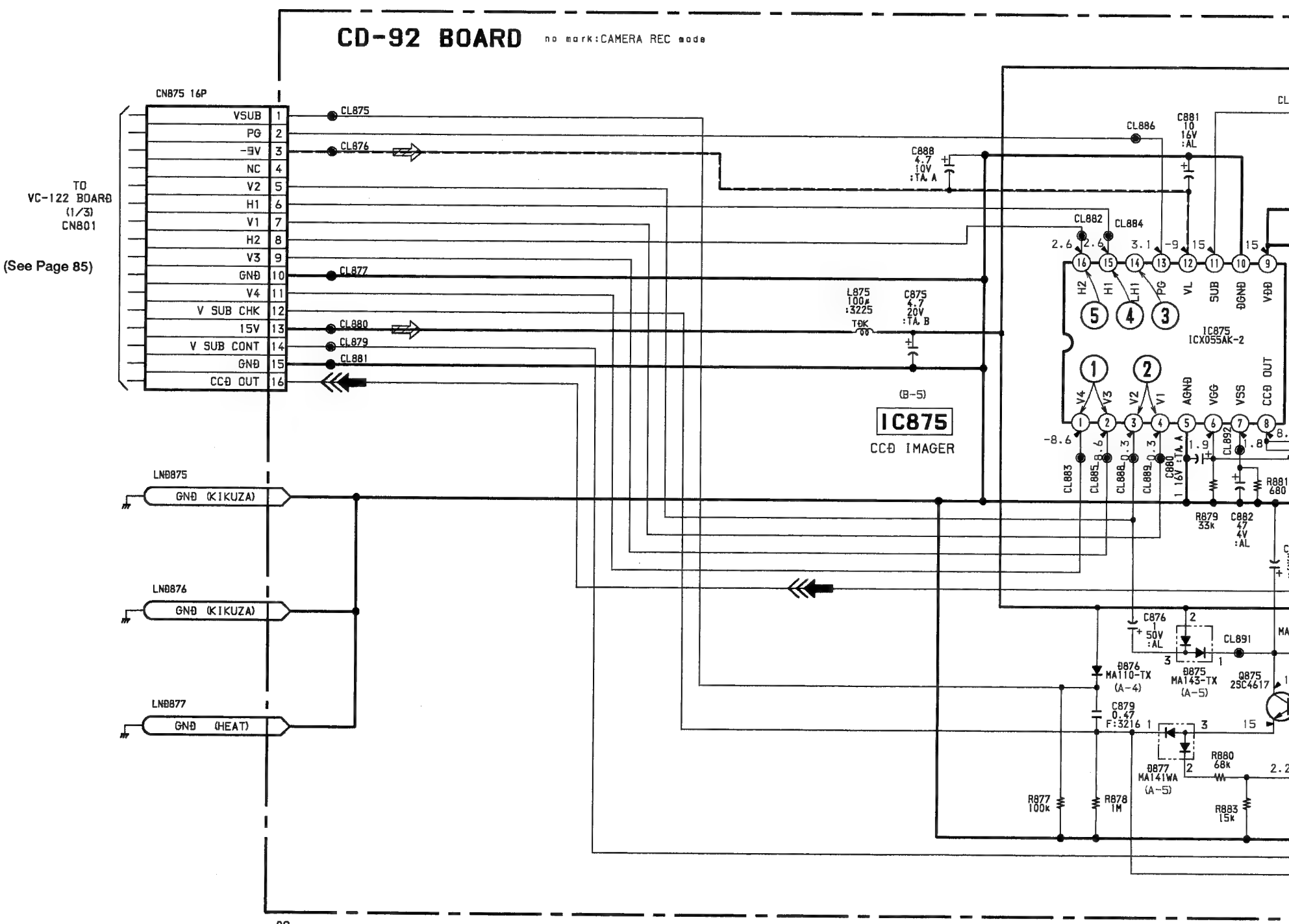
side seen from
ed.
seen from the

Figure 1 shows the underside of a printed circuit board (PCB) for a 16-bit digital-to-analog converter. The board is populated with various electronic components, including integrated circuits, capacitors, and resistors. A large, central square component is likely the DAC core. The board is labeled with 'A', 'B', 'C', and 'D' along the left edge. A reference number '1-644-992-' is visible at the bottom right.

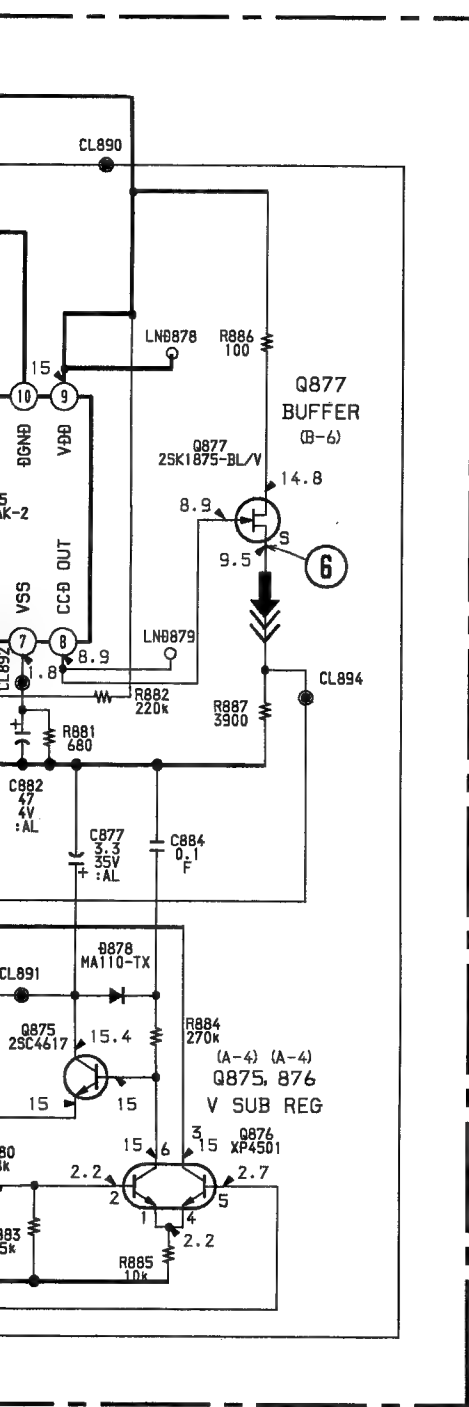
CD-92 (CCD IMAGER) SCHEMATIC DIAGRAM

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

— Ref. No. CD-92 BOARD: 1000 series —



12	13	14	15	16	17	18	19	20	21	22
----	----	----	----	----	----	----	----	----	----	----



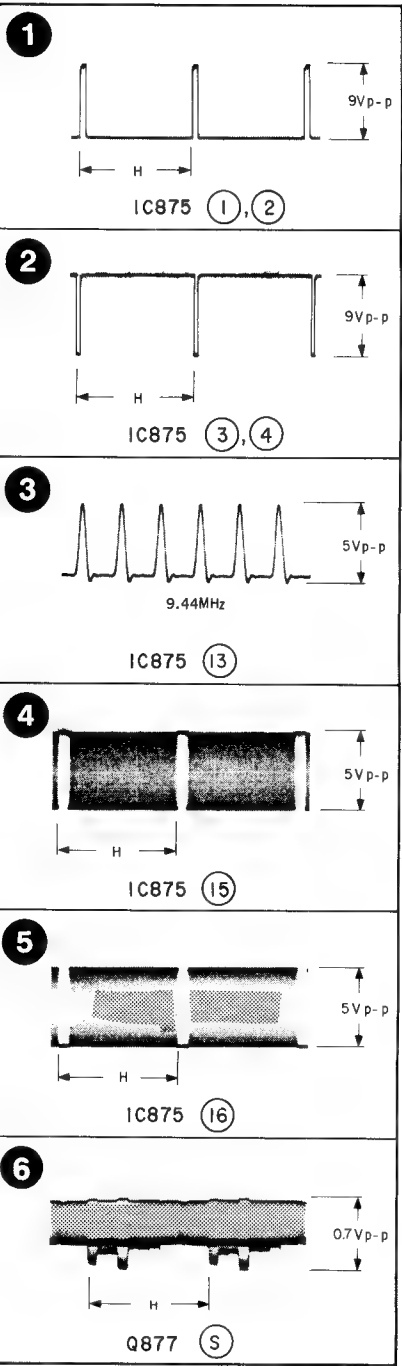
Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not. The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board. The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts. When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure. Also, prevent the receiving light section from dust attached and strong light.

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡➡➡	
PB				

CD-92 BOARD



- For printed wiring boards.
- VC-122 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)

Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Component side)

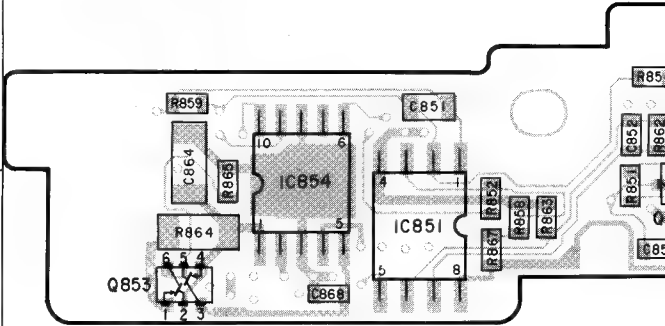
< IC >

IC701	8-759-243-19	IC TC7SU04F
IC702	8-759-064-36	IC MB88346BPFV-EF
IC703	8-759-710-07	IC NJM2234M
IC704	8-752-348-92	IC CXD2101AR
IC705	8-759-063-18	IC CXD2103AR
IC706	8-752-355-56	IC CXD2104BN
IC707	8-752-347-93	IC CXD2100AQ
IC709	8-752-840-64	IC CXP80624-434R
IC712	8-759-073-67	IC BR9021AF
IC801	8-752-350-16	IC CXD1257AR
IC802	8-752-056-39	IC CXA1507BR
IC803	8-752-053-26	IC CXA1399Q
IC804	8-752-327-48	IC CXD1250N
IC805	8-752-054-61	IC CXA1390AR
IC851	8-759-701-24	IC NJM3414M
IC852	8-759-998-96	IC LM324D
IC853	8-759-058-47	IC MPC1724VMEL
IC854	8-759-823-51	IC LB1830M
IC856	8-759-998-98	IC LM358D

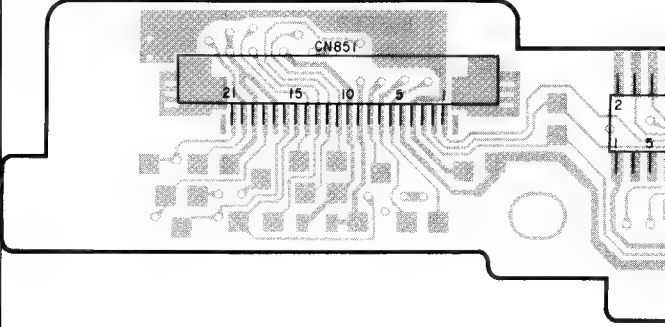
< TRANSISTOR >

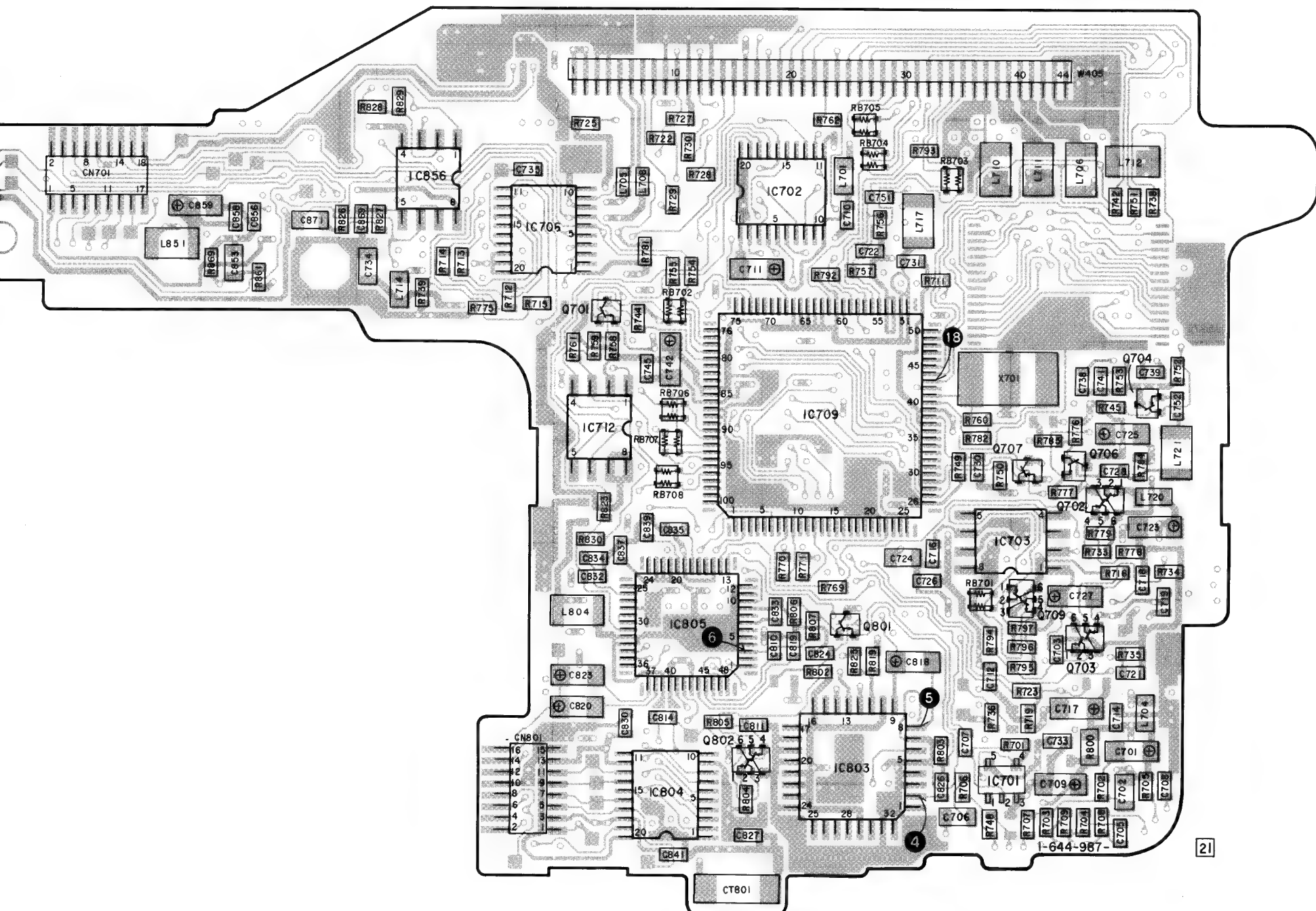
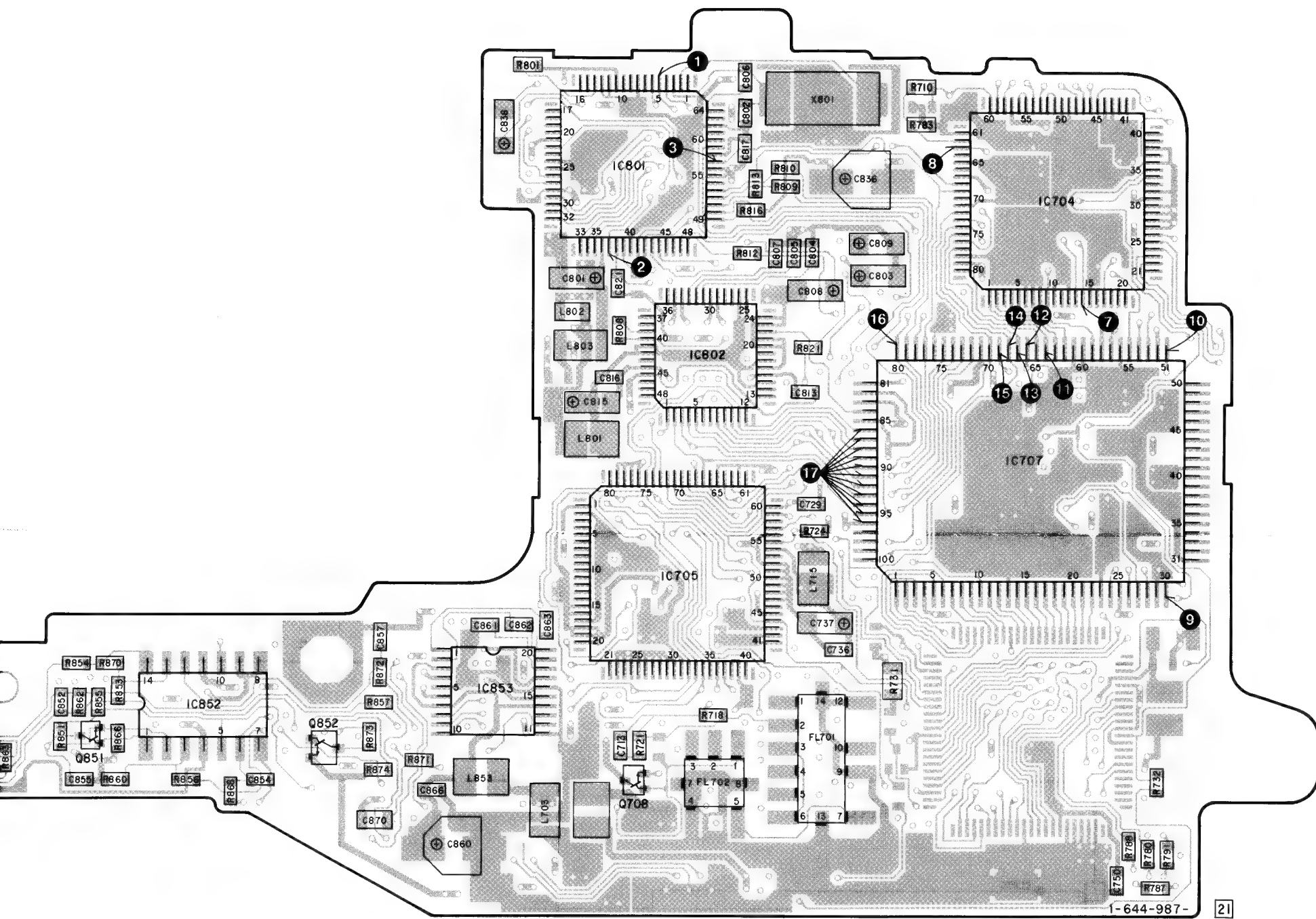
Q701	8-729-928-87	TRANSISTOR DTC124EE
Q702	8-729-427-74	TRANSISTOR XP4601
Q703	8-729-427-74	TRANSISTOR XP4601
Q704	8-729-425-50	TRANSISTOR 2SB1462Q
Q706	8-729-425-64	TRANSISTOR 2SD2216Q
Q707	8-729-428-84	TRANSISTOR UN9111
Q708	8-729-425-64	TRANSISTOR 2SD2216Q
Q709	8-729-427-72	TRANSISTOR XP4501
Q801	8-729-425-64	TRANSISTOR 2SD2216Q
Q802	8-729-427-70	TRANSISTOR XP4401
Q851	8-729-425-64	TRANSISTOR 2SD2216Q
Q852	8-729-013-88	TRANSISTOR RN1302
Q853	8-729-427-70	TRANSISTOR XP4401

VC-122 BOARD (COMPONENT SIDE)



VC-122 BOARD (CONDUCTOR SIDE)





- Refer to page 82 for Printed Wiring Board.

(See Page 88, 89)

VC-122 BOARD (2/3)

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡➡➡	
PB				

1

5Vp-p

1.5 μ sec

IC801 (5)

2

5.5Vp-p

0.1 μ sec

IC801 (37)

3

5.6Vp-p

14.187 MHz

IC801 (57)

4

0.4Vp-p

H

IC803 (2)

5

1Vp-p

H

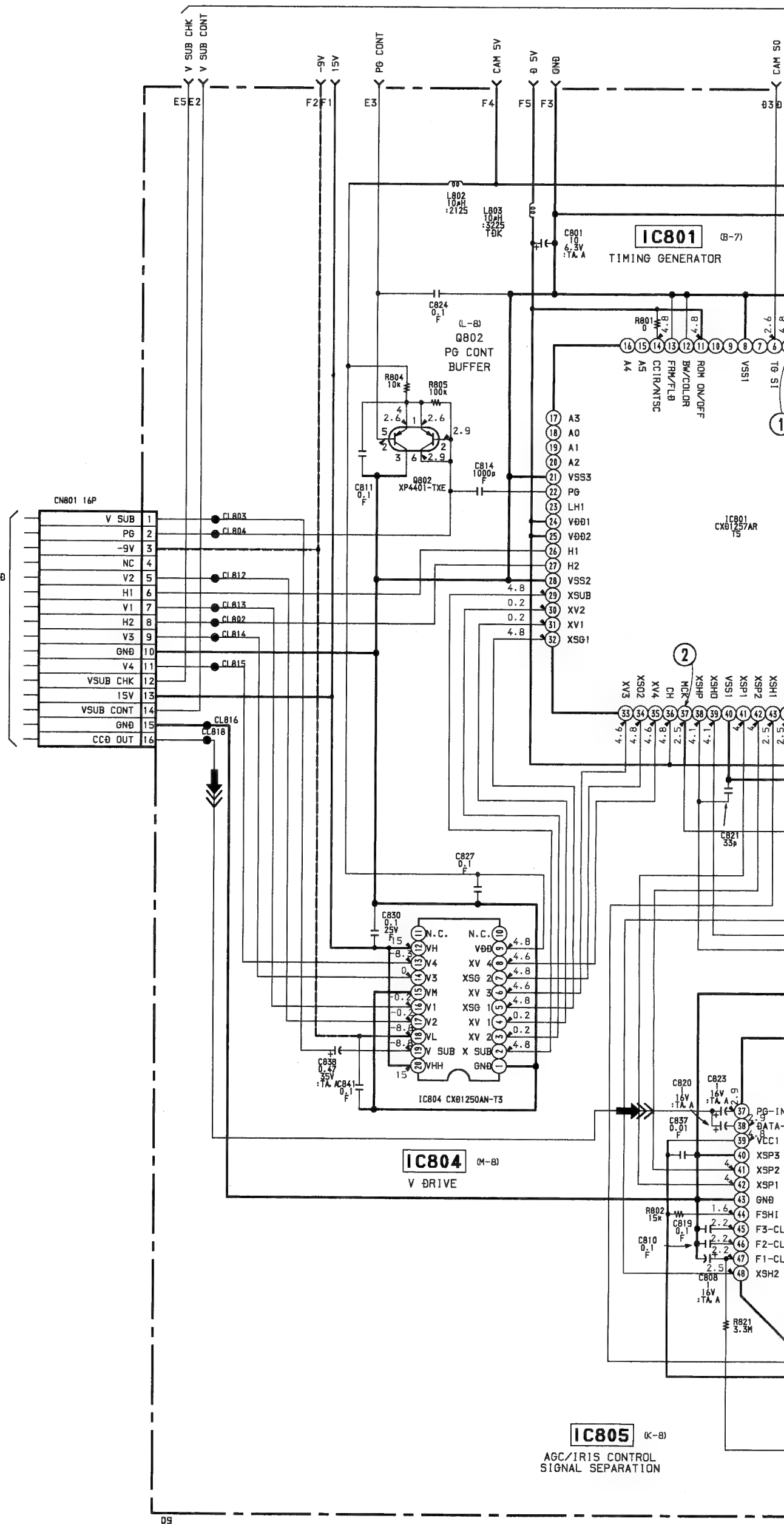
IC803 (8)

6

0.4Vp-p

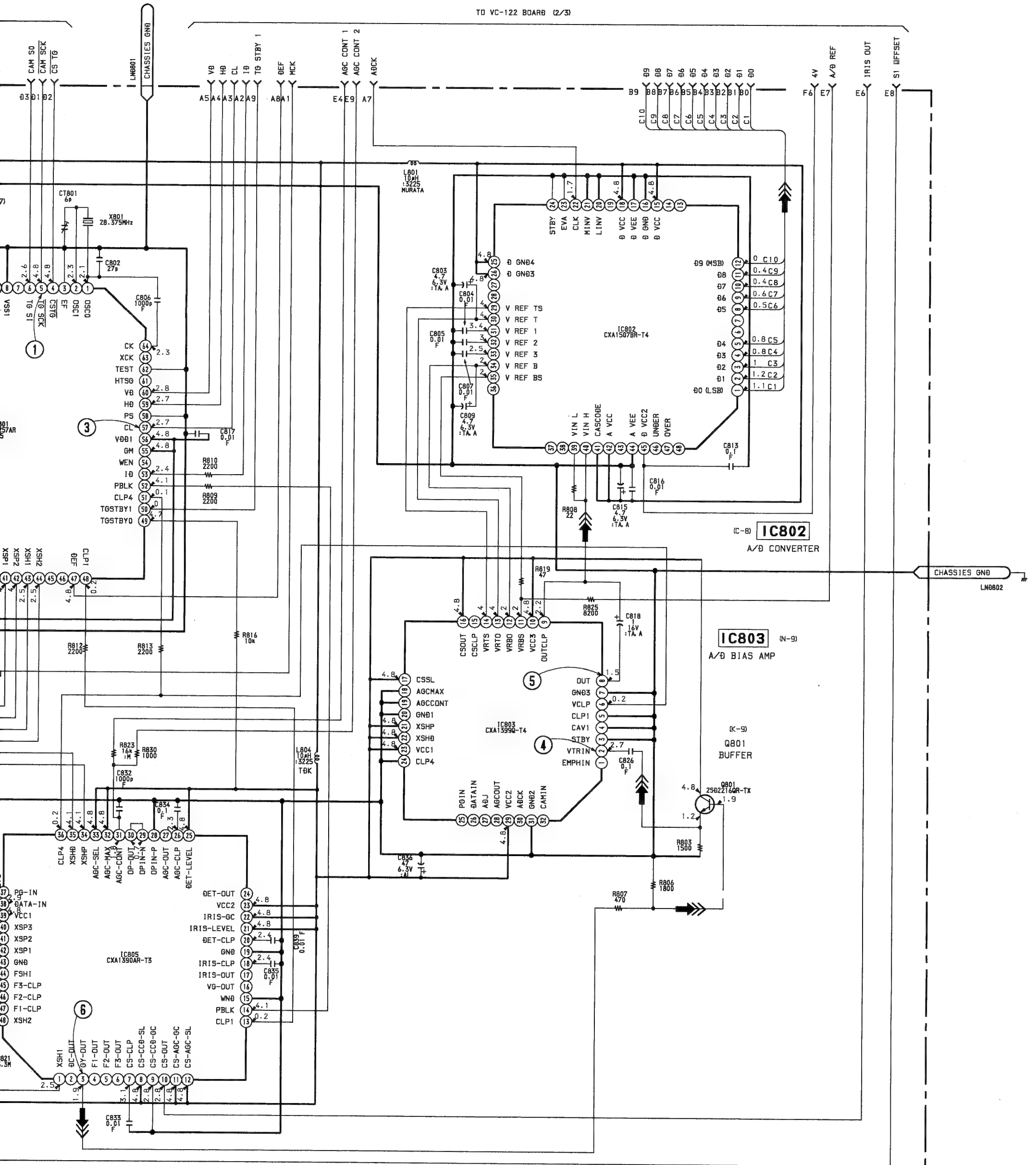
H

IC805 (3)



(See Page 89)

TO VC-122 BOARD (2/3)



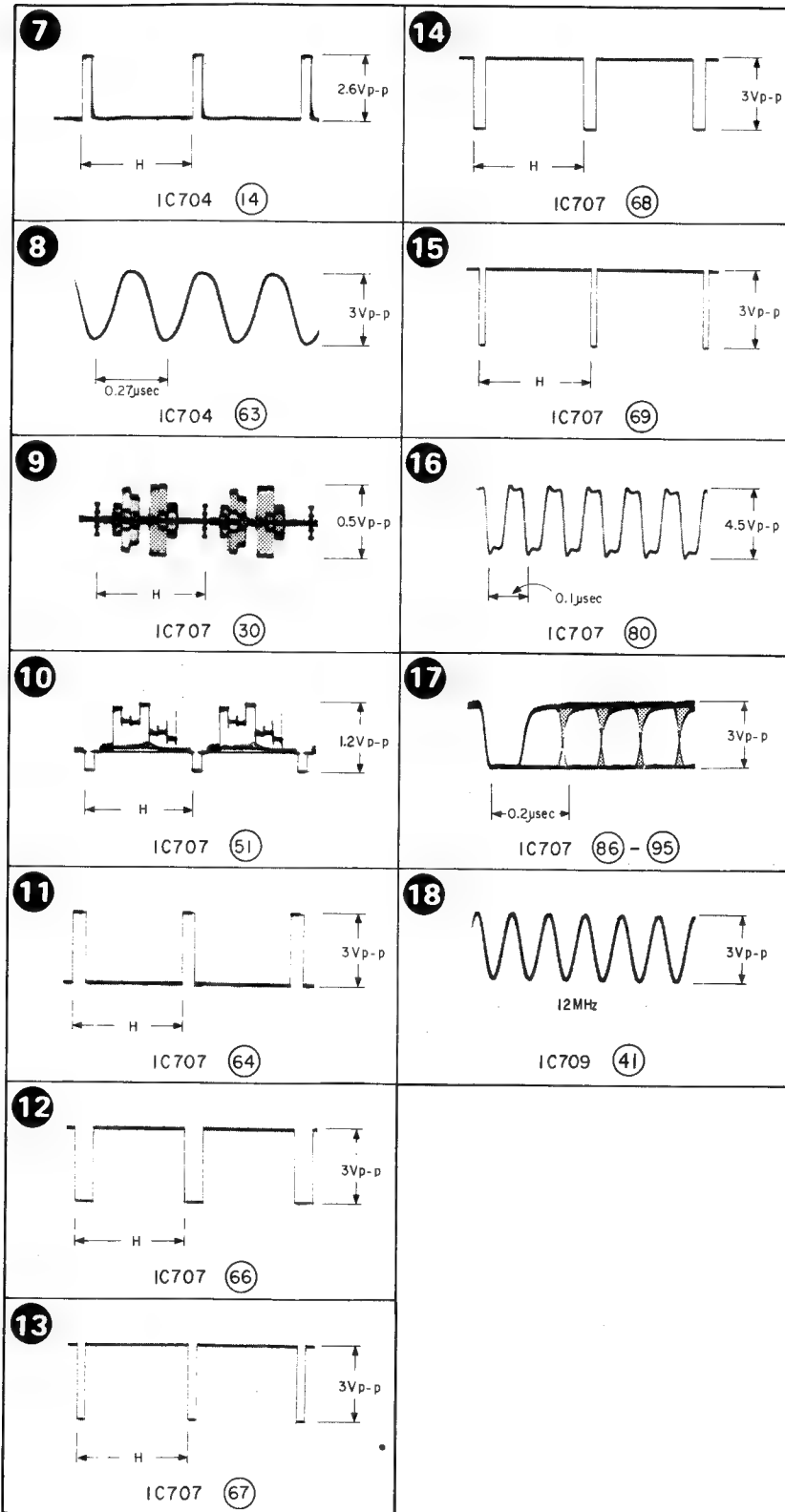
no mark: CAMERA REC mode VC-122 BOARD (1/3)

(See Page 86, 87)



VC-122 BOARD (2/3)

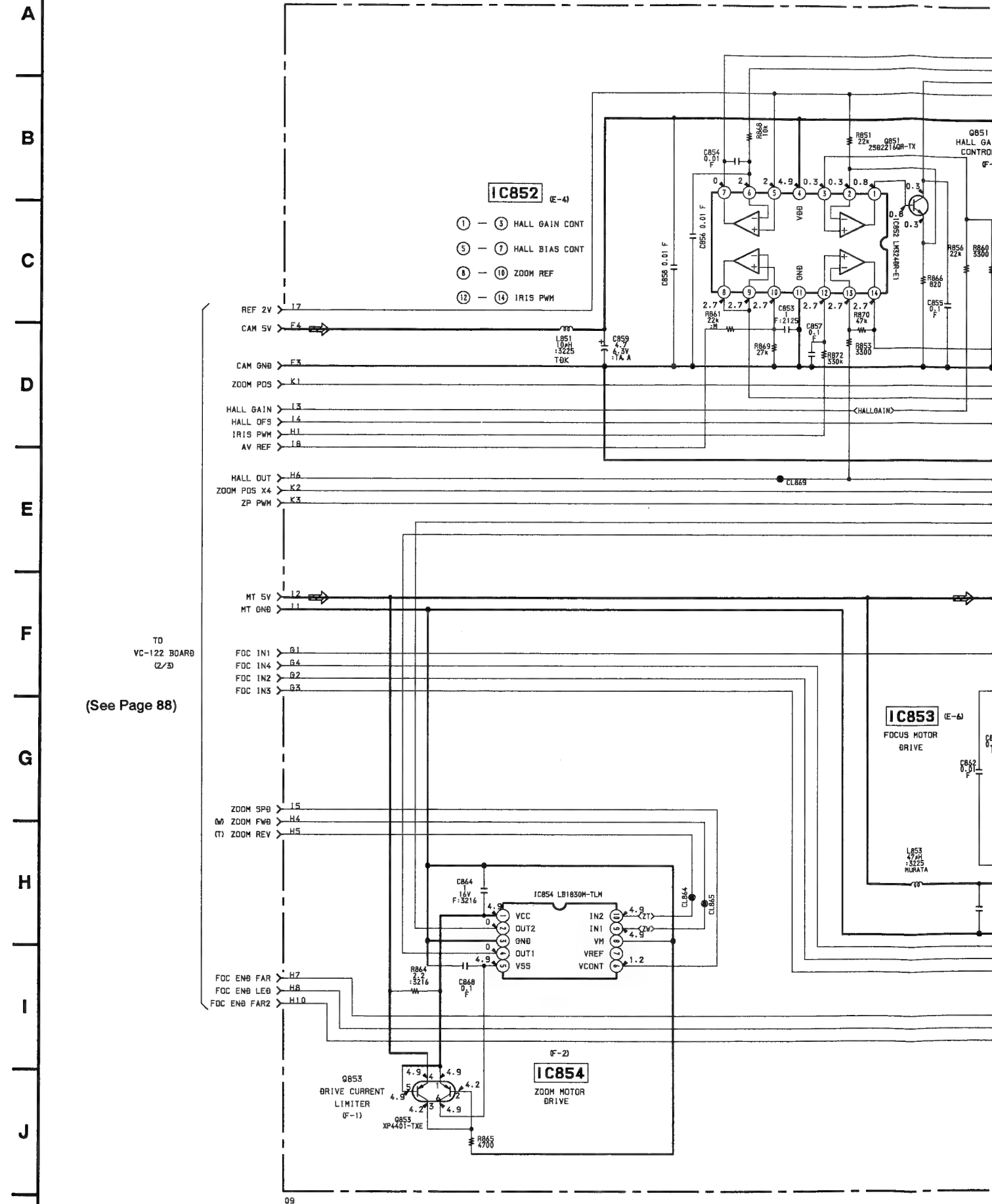
VC-122 BOARD (2/3)

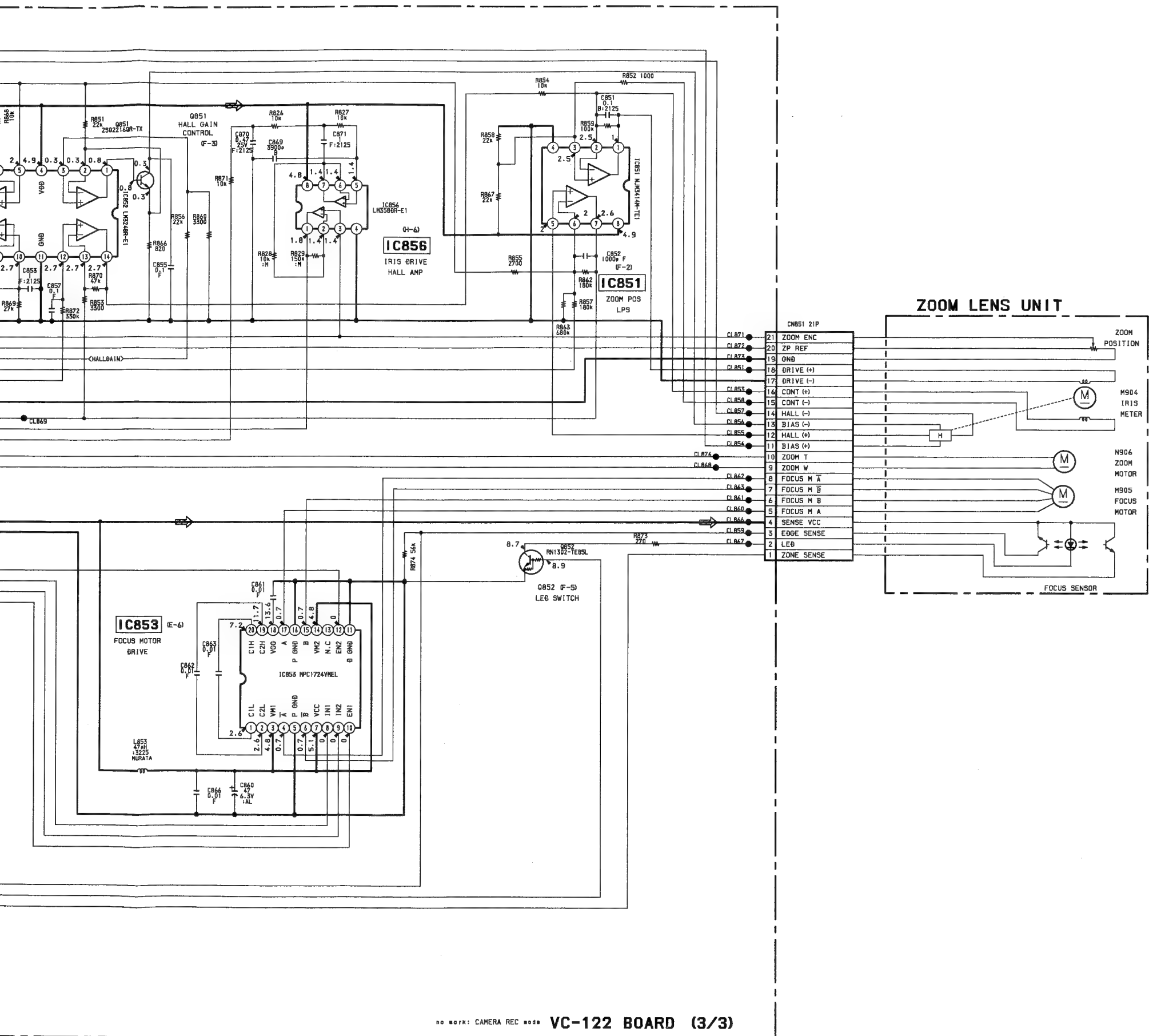


VC-122 (LENS DRIVE) SCHEMATIC DIAGRAM

• Refer to page 82 for Printed Wiring Board.

— Ref. No. VC-122 BOARD: 3000 series —





NO MARK: CAMERA REC MODE VC-122 BOARD (3/3)

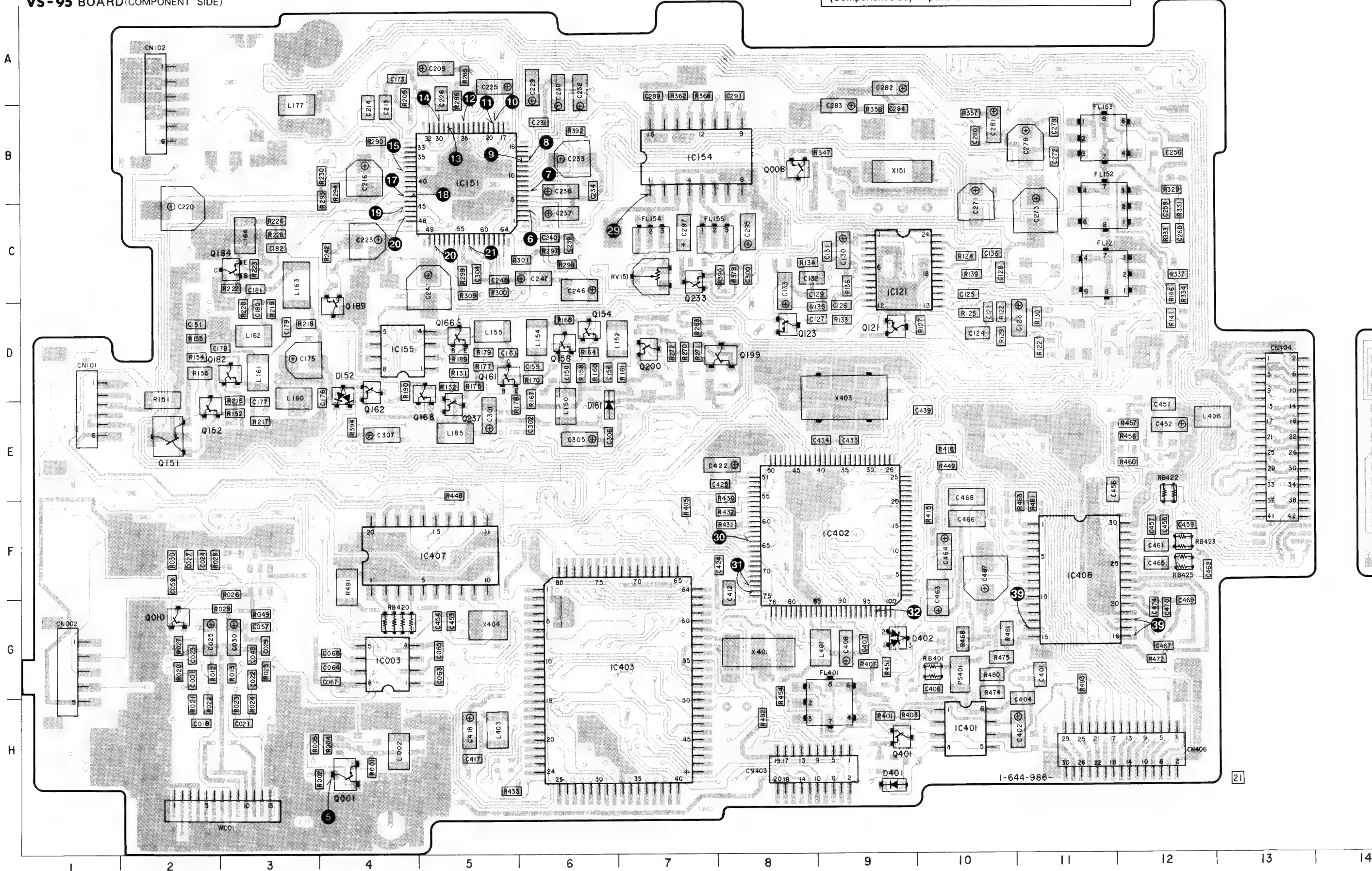
VS-95 (REC/PB HEAD AMP, VIDEO, SERVO/SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No. VS-95 BOARD: 4000 series —

VS-95 BOARD (COMPONENT SIDE)

- For printed wiring boards.
- VS-95 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)
Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Component side)





< DIODE >

D001	8-719-800-76	DIODE 1SS123
D121	8-719-027-50	DIODE MA142WK
D152	8-719-027-48	DIODE MA142WA
D159	8-719-027-50	DIODE MA142WK
D160	8-719-027-50	DIODE MA142WK
D161	8-719-404-46	DIODE MA110
D162	8-719-027-50	DIODE MA142WK
D163	8-719-027-50	DIODE MA142WK
D401	8-719-421-27	DIODE MA728
D402	8-719-027-50	DIODE MA142WK
D403	8-719-404-46	DIODE MA110

< IC >

IC001	8-752-033-38	IC CXA1202R
IC003	8-752-053-21	IC CXA1211M
IC121	8-759-605-61	IC CXA1203N
IC151	8-752-065-54	IC CXA1207AR
IC152	8-752-065-56	IC CXA1208R
IC154	8-752-333-24	IC CXL1506M
IC155	8-752-053-21	IC CXA1211M
IC156	8-759-055-82	IC M62353GP
IC158	8-759-055-82	IC M62353GP
IC159	8-759-636-33	IC CXA1452N
IC401	8-759-056-84	IC S-8420AF
IC402	8-752-838-20	IC CXP80624-428R
IC403	8-759-096-79	IC uPD75316GF-318-389
IC404	8-759-059-42	IC CXA1481AR
IC405	8-759-044-78	IC BR9011BF-RE2
IC406	8-759-081-96	IC uPD6456GS-620
IC407	8-759-145-63	IC uPD7564G-540
IC408	8-759-057-60	IC MCD004BM
IC409	8-759-999-02	IC TL1596CDB
IC410	8-759-062-02	IC MPC1720VM

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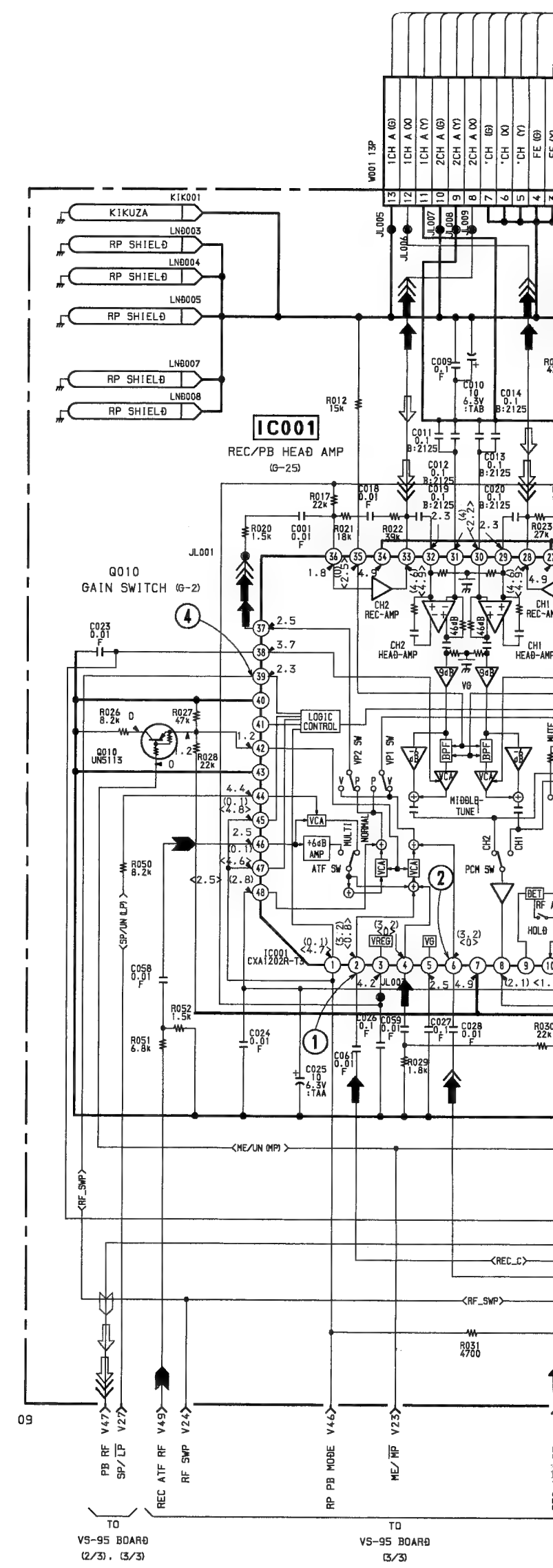
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Q008	8-729-402-32	TRANSISTOR 2SD1819A-R
Q010	8-729-403-35	TRANSISTOR UN5113
Q019	8-729-120-28	TRANSISTOR 2SC1623-L5L6
Q020	8-729-120-28	TRANSISTOR 2SC1623-L5L6
Q021	8-729-905-23	TRANSISTOR 2SA1576-R
Q022	8-729-402-55	TRANSISTOR 2SB1218A-R
Q024	8-729-102-07	TRANSISTOR 2SC2223-F13
Q025	8-729-014-16	TRANSISTOR RN2302
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R
Q121	8-729-403-35	TRANSISTOR UN5113
Q123	8-729-402-42	TRANSISTOR UN5213
Q124	8-729-403-35	TRANSISTOR UN5113
Q125	8-729-117-73	TRANSISTOR 2SC4178-F14
Q126	8-729-402-32	TRANSISTOR 2SD1819A-R
Q151	8-729-101-07	TRANSISTOR 2SB798-DL
Q152	8-729-402-32	TRANSISTOR 2SD1819A-R
Q154	8-729-402-32	TRANSISTOR 2SD1819A-R
Q158	8-729-402-32	TRANSISTOR 2SD1819A-R

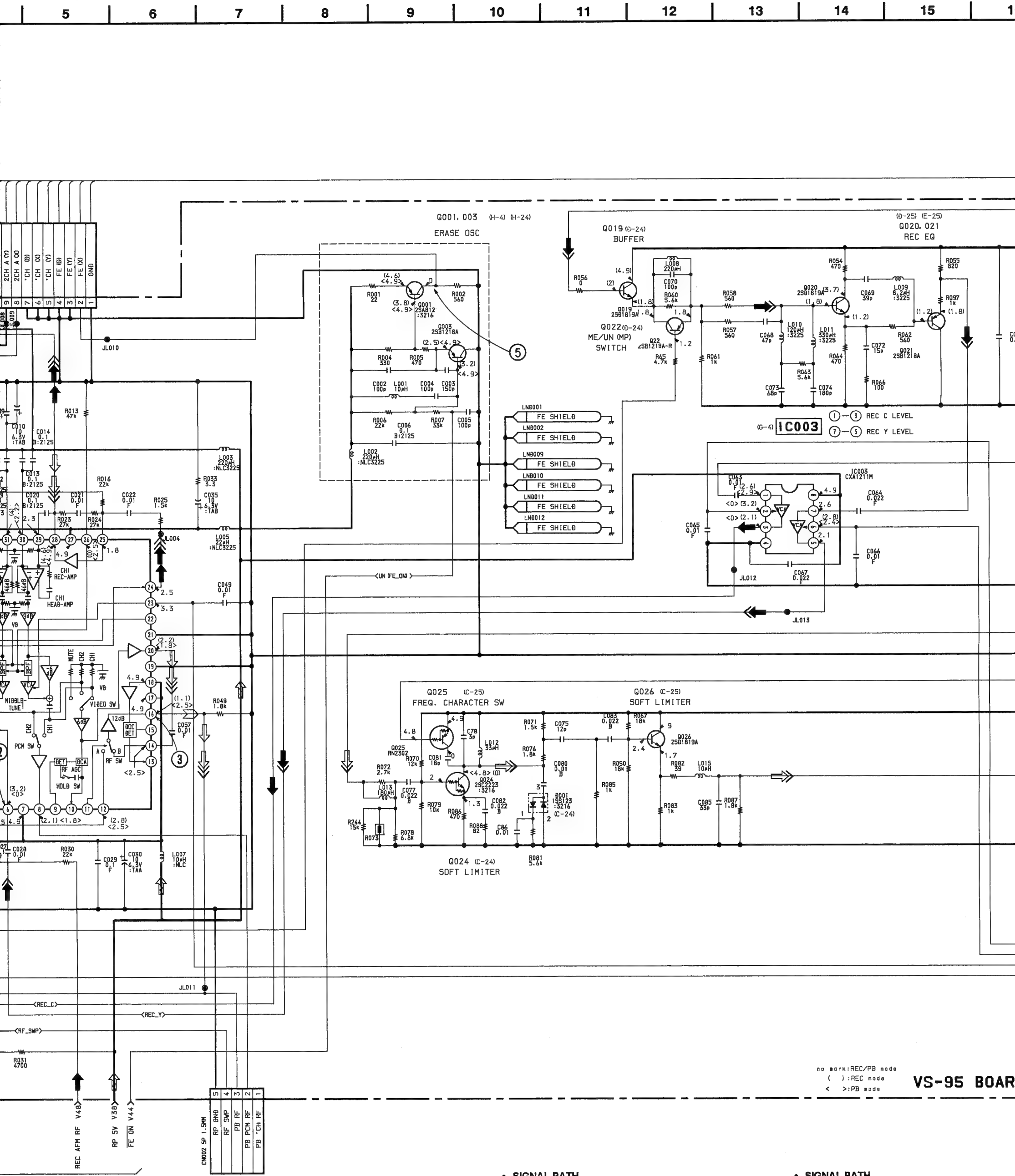
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Q161	8-729-402-32	TRANSISTOR 2SD1819A-R
Q162	8-729-403-35	TRANSISTOR UN5113
Q166	8-729-402-55	TRANSISTOR 2SB1218A-R
Q168	8-729-403-35	TRANSISTOR UN5113
Q170	8-729-420-20	TRANSISTOR XN4312
Q171	8-729-117-73	TRANSISTOR 2SC4178-F14
Q175	8-729-402-32	TRANSISTOR 2SD1819A-R
Q176	8-729-402-32	TRANSISTOR 2SD1819A-R
Q177	8-729-402-55	TRANSISTOR 2SB1218A-R
Q178	8-729-402-55	TRANSISTOR 2SB1218A-R
Q180	8-729-422-54	TRANSISTOR XN4215
Q182	8-729-402-32	TRANSISTOR 2SD1819A-R
Q183	8-729-420-53	TRANSISTOR UN5115
Q184	8-729-402-32	TRANSISTOR 2SD1819A-R
Q189	8-729-402-32	TRANSISTOR 2SD1819A-R
Q191	8-729-402-32	TRANSISTOR 2SD1819A-R
Q192	8-729-402-32	TRANSISTOR 2SD1819A-R
Q194	8-729-402-32	TRANSISTOR 2SD1819A-R
Q195	8-729-402-55	TRANSISTOR 2SB1218A-R
Q196	8-729-403-35	TRANSISTOR UN5113
Q199	8-729-807-87	TRANSISTOR 2SB1295-UL6
Q200	8-729-013-88	TRANSISTOR RN1302
Q203	8-729-402-55	TRANSISTOR 2SB1218A-R
Q204	8-729-402-32	TRANSISTOR 2SD1819A-R
Q205	8-729-402-42	TRANSISTOR UN5213
Q207	8-729-403-35	TRANSISTOR UN5113
Q208	8-729-013-88	TRANSISTOR RN1302
Q210	8-729-402-42	TRANSISTOR UN5213
Q212	8-729-402-55	TRANSISTOR 2SB1218A-R
Q214	8-729-420-12	TRANSISTOR XN4213
Q217	8-729-402-42	TRANSISTOR UN5213
Q219	8-729-403-35	TRANSISTOR UN5113
Q220	8-729-402-42	TRANSISTOR UN5213
Q221	8-729-420-12	TRANSISTOR XN4213
Q222	8-729-402-32	TRANSISTOR 2SD1819A-R
Q223	8-729-402-42	TRANSISTOR UN5213
Q229	8-729-402-55	TRANSISTOR 2SB1218A-R
Q230	8-729-402-32	TRANSISTOR 2SD1819A-R
Q231	8-729-402-55	TRANSISTOR 2SB1218A-R
Q232	8-729-402-32	TRANSISTOR 2SD1819A-R
Q233	8-729-402-32	TRANSISTOR 2SD1819A-R
Q234	8-729-402-55	TRANSISTOR 2SB1218A-R
Q236	8-729-420-56	TRANSISTOR UN511E
Q237	8-729-425-50	TRANSISTOR 2SB1462Q
Q401	8-729-402-48	TRANSISTOR UN521E
Q403	8-729-403-35	TRANSISTOR UN5113
Q405	8-729-907-00	TRANSISTOR DTC114EU
Q409	8-729-017-67	TRANSISTOR 2SB1574

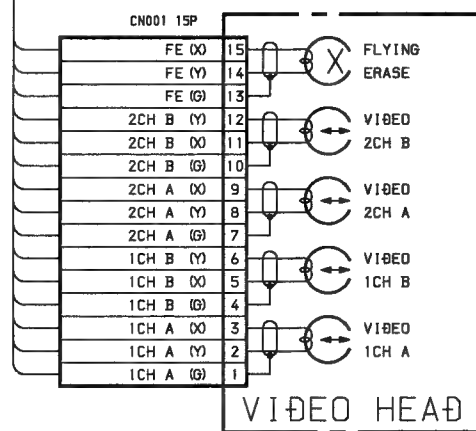
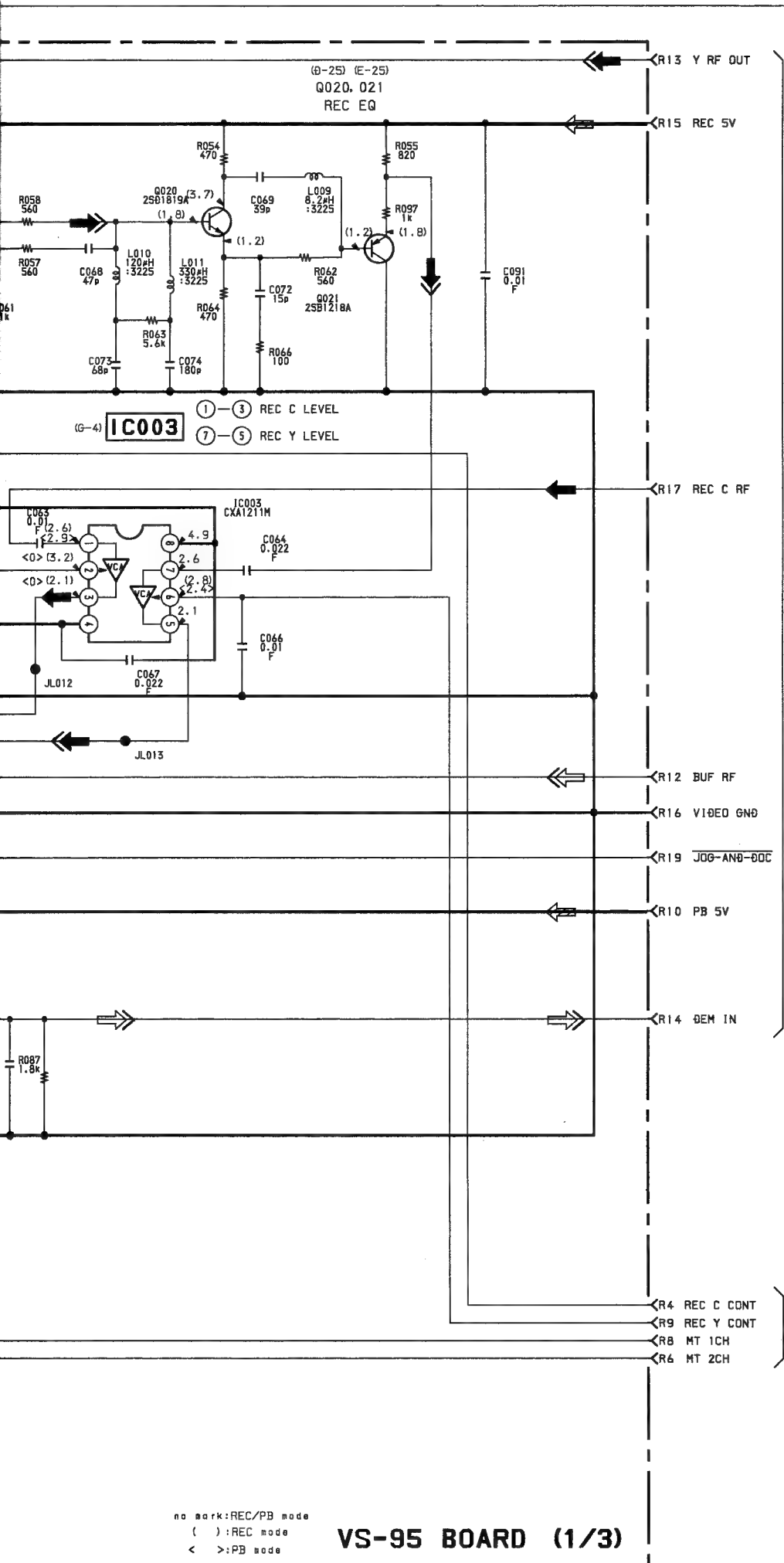
VS-95 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

• Refer to p

— Ref. No. VS-95 BOARD: 4000 series —



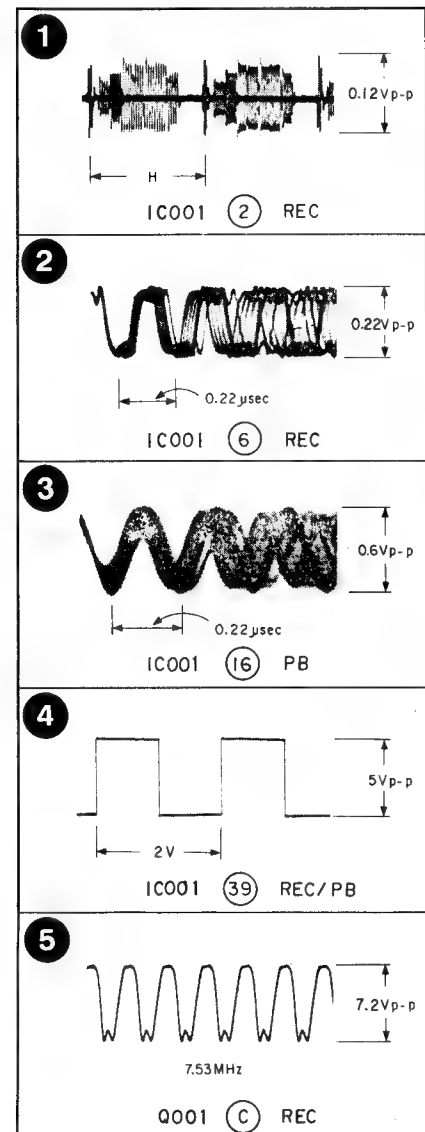




TO
VS-95 BOARD
(2/3)

(See Page 103, 104)

VS-95 BOARD (1/3)

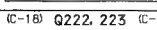


TO
VS-95 BOARD
(2/3)

(See Page 105)

• SIGNAL PATH

AUDIO SIGNAL	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➡		➡

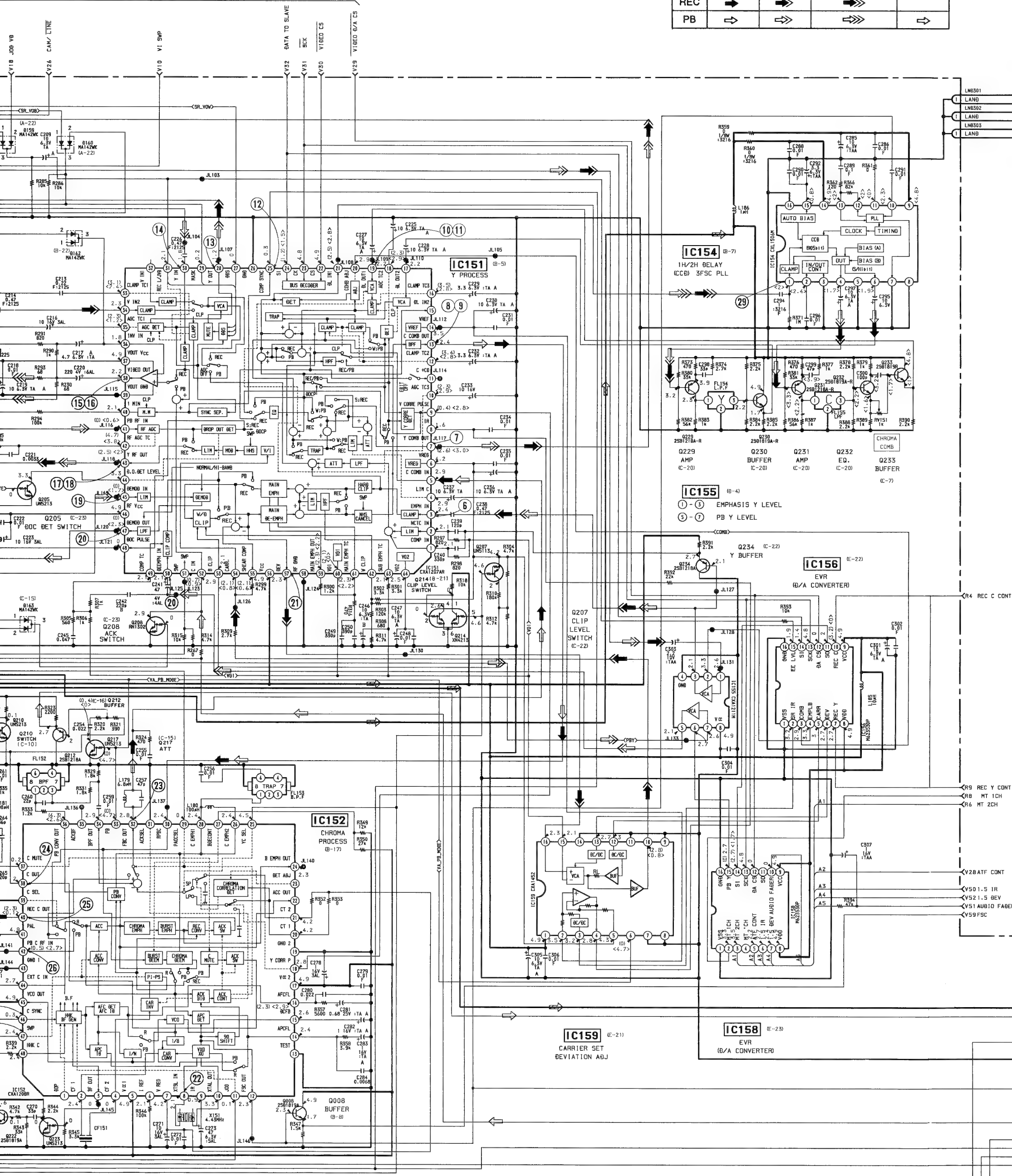


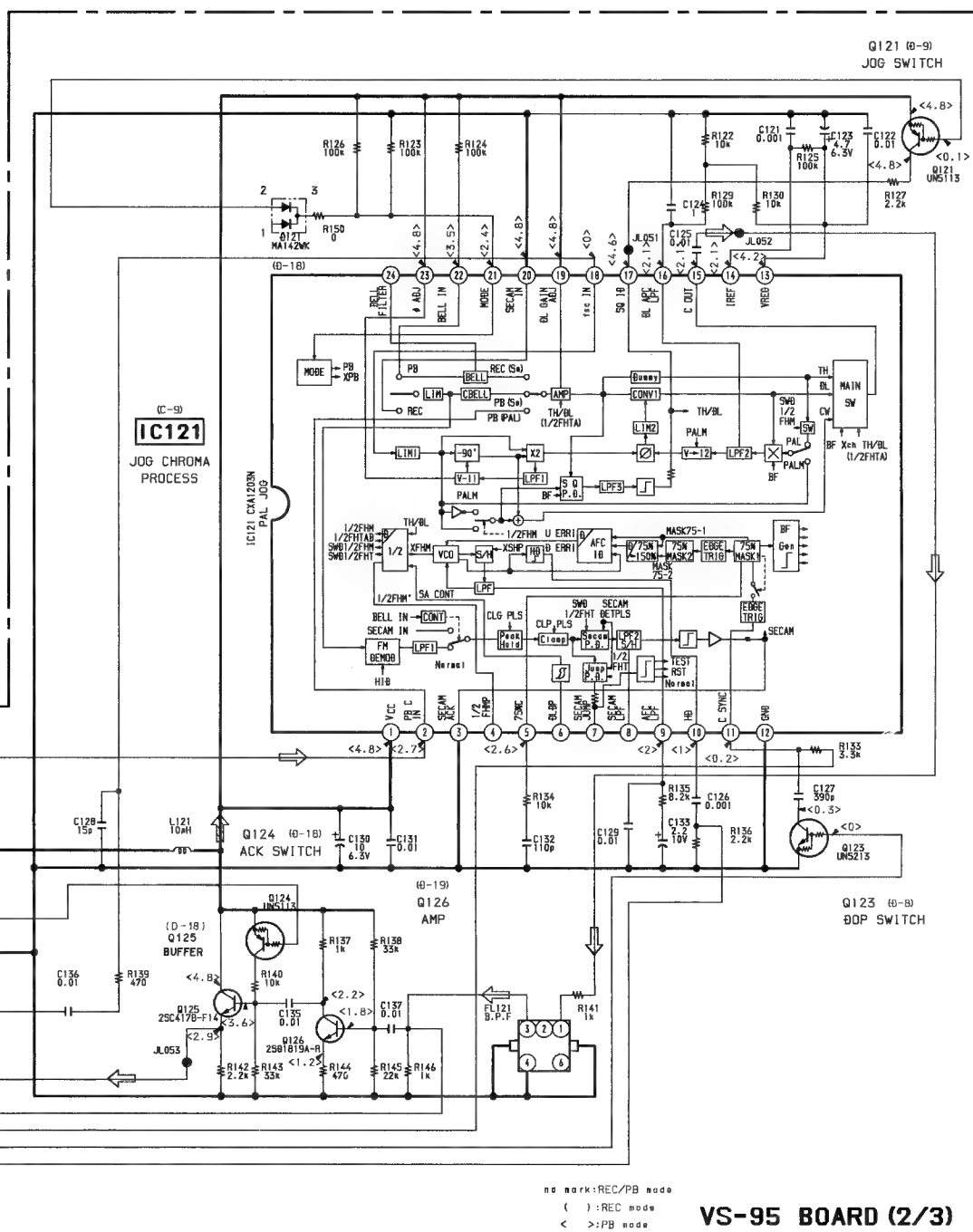
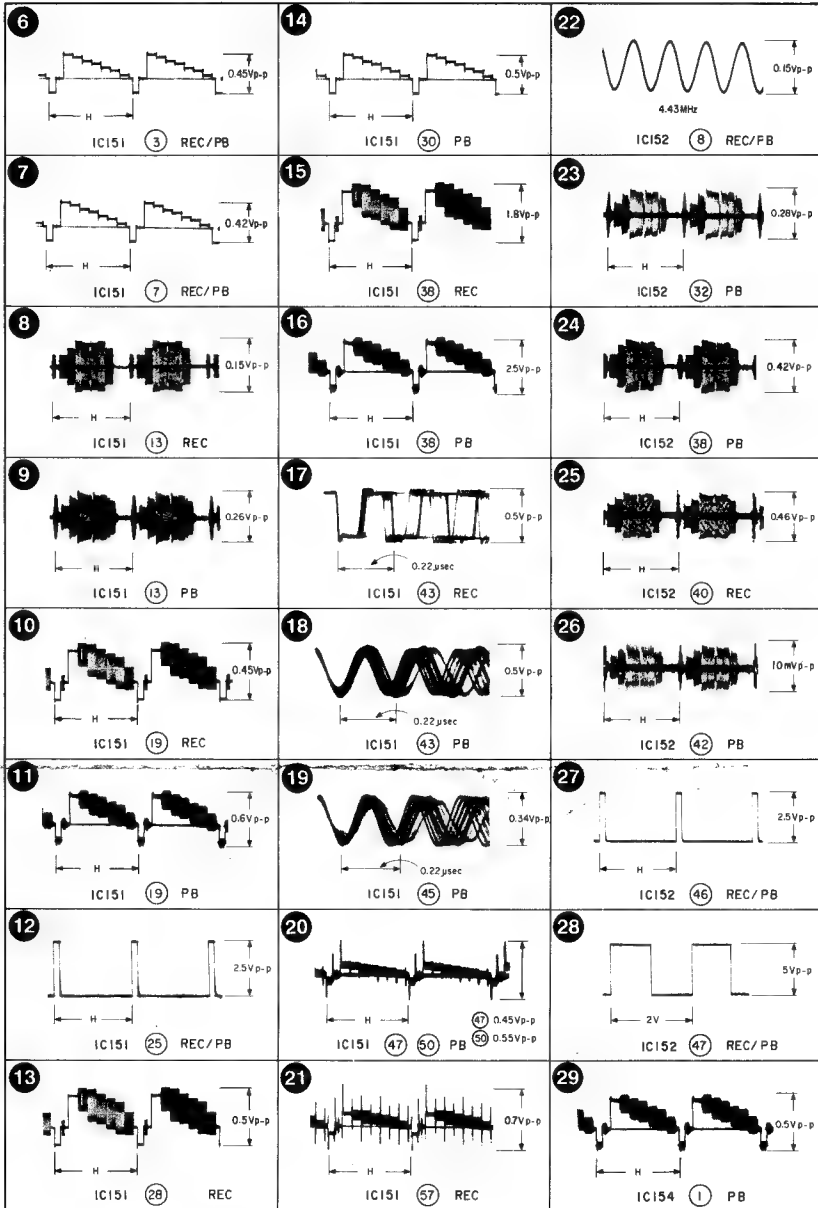
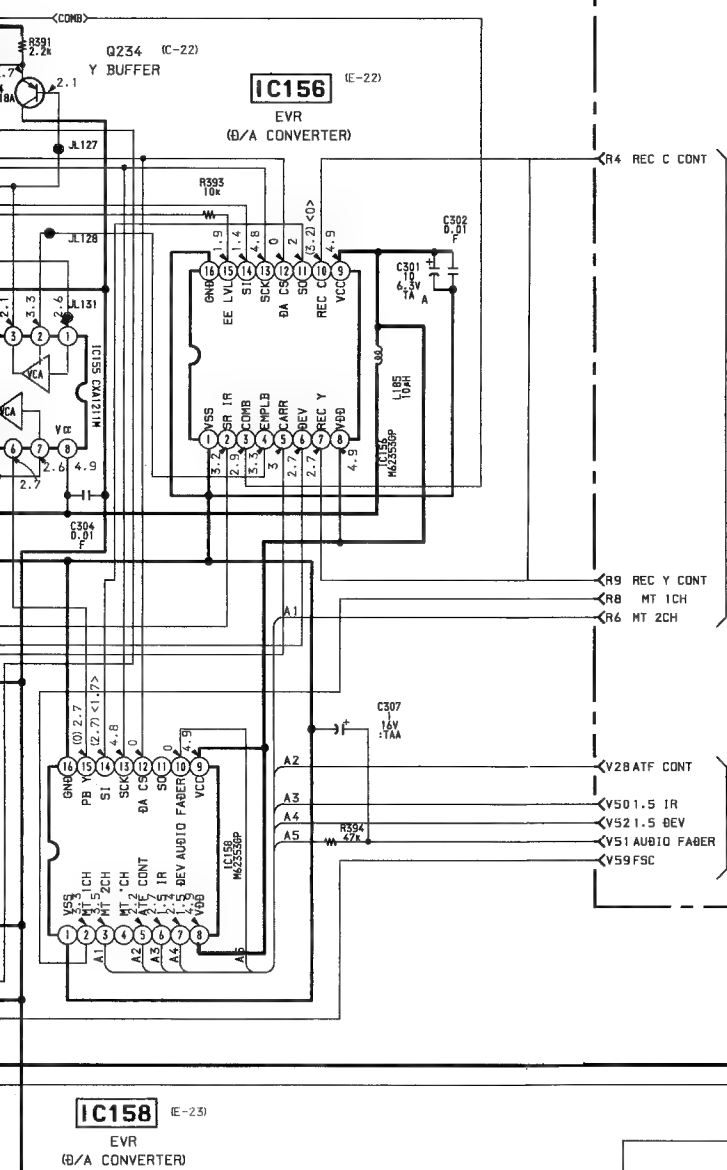
(See Page 109)

TO VS-95 BOARD (3/3)

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	→	→	
PB	→	→	→	→





— Ref. No. VS-95 BOARD: 4000 series —

A

B

C

D

E

F

G

H

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J

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L

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P

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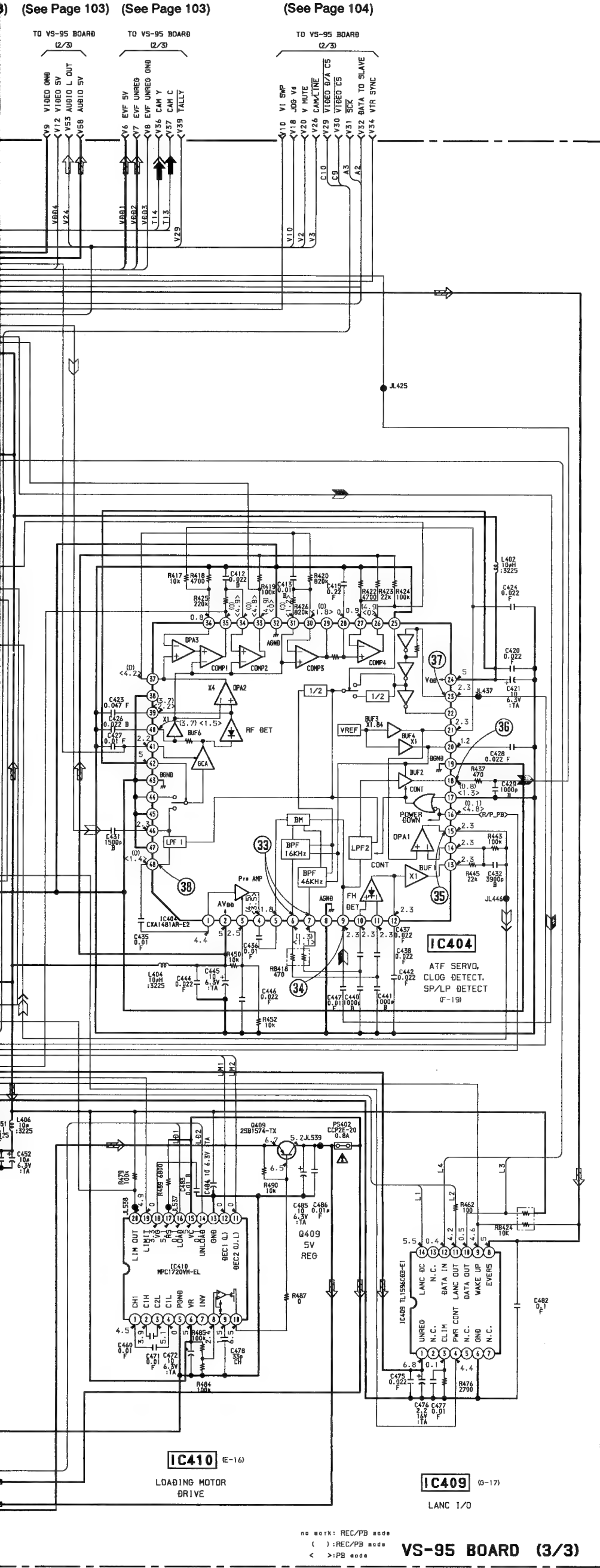
(See Page 117)

(See Page 115)

(See Page 139)

(See Page 90)



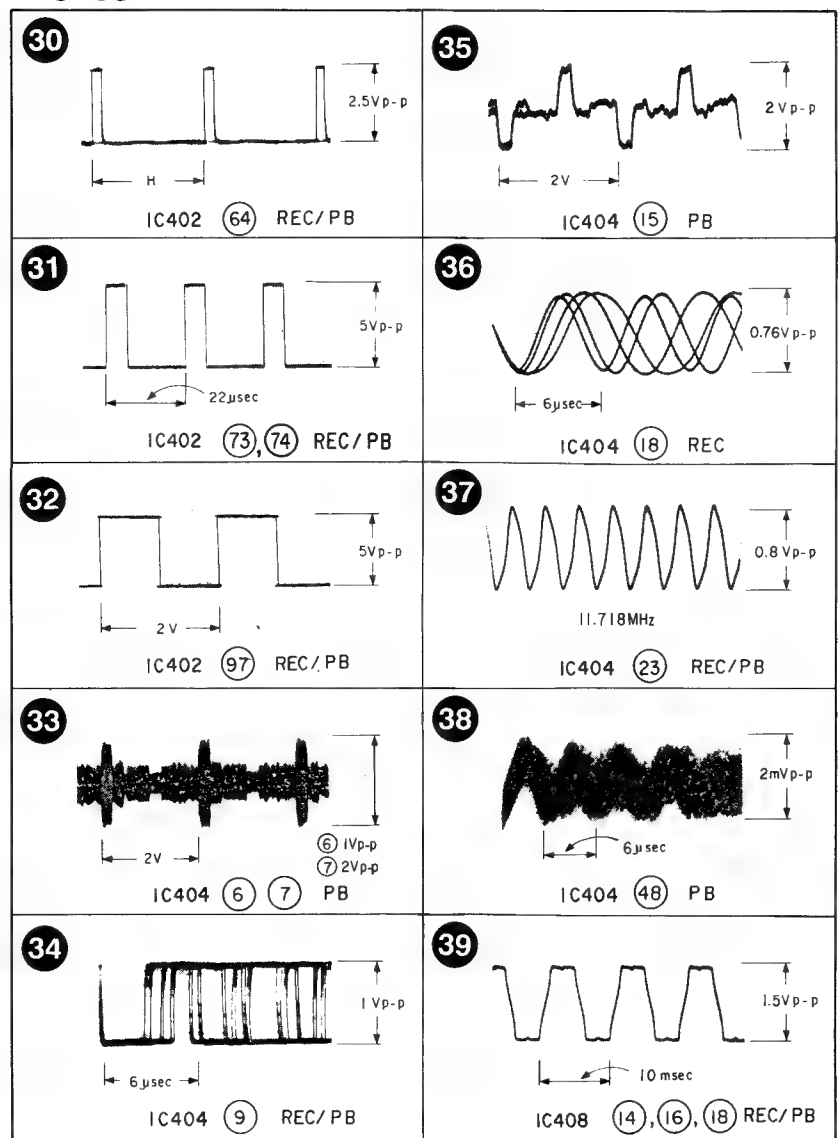


SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡		➡
PB				➡➡

	REC	REC/PB	PB
Drum speed servo		➡	
Drum phase servo		➡➡	
Drum servo (speed and phase)		➡➡➡	
Capstan speed servo			
Capstan phase servo			➡➡
Capstan servo (speed and phase)		➡➡➡	
Ref. signal	➡➡	➡➡	➡➡

VS-95 BOARD (3/3)



CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH),

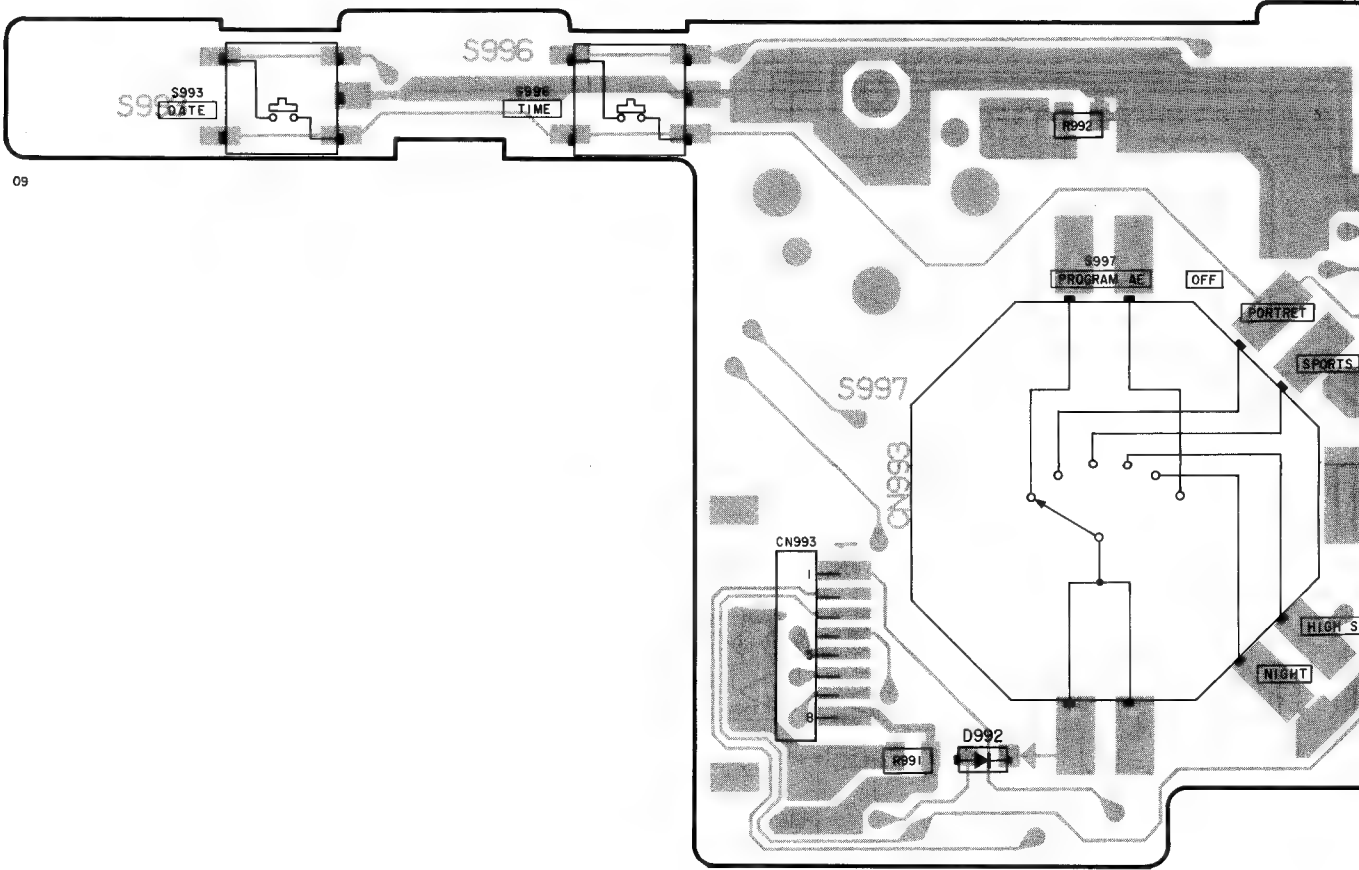
— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —

- For printed wiring boards.
- CF-32, ED-35, MF-191, VK-27 boards is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

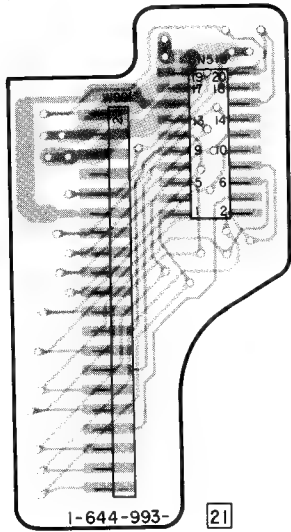
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

D992 8-719-404-

CF-32 BOARD (COMPONENT SIDE)

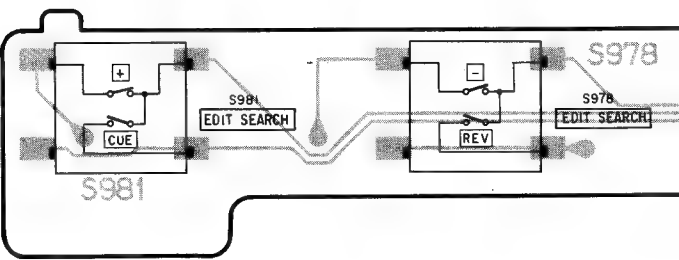


CN-65 BOARD (CONDUCTOR SIDE)

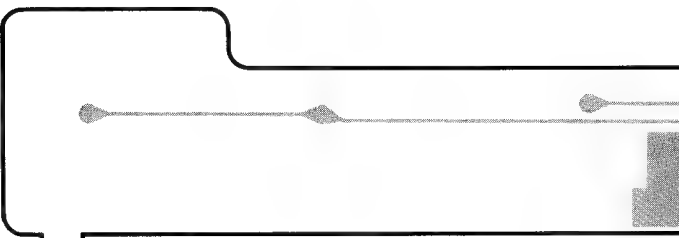


- For printed wiring boards.
- CN-65 board is the printed wiring board which has four layers structure but inner two layers' patterns and component side pattern are omitted.
- ● : Through hole is omitted.

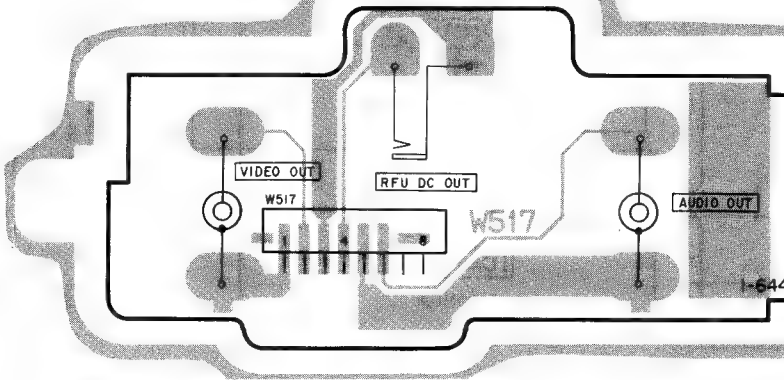
VK-27 BOARD (COMPONENT SIDE)



VK-27 BOARD (CONDUCTOR SIDE)



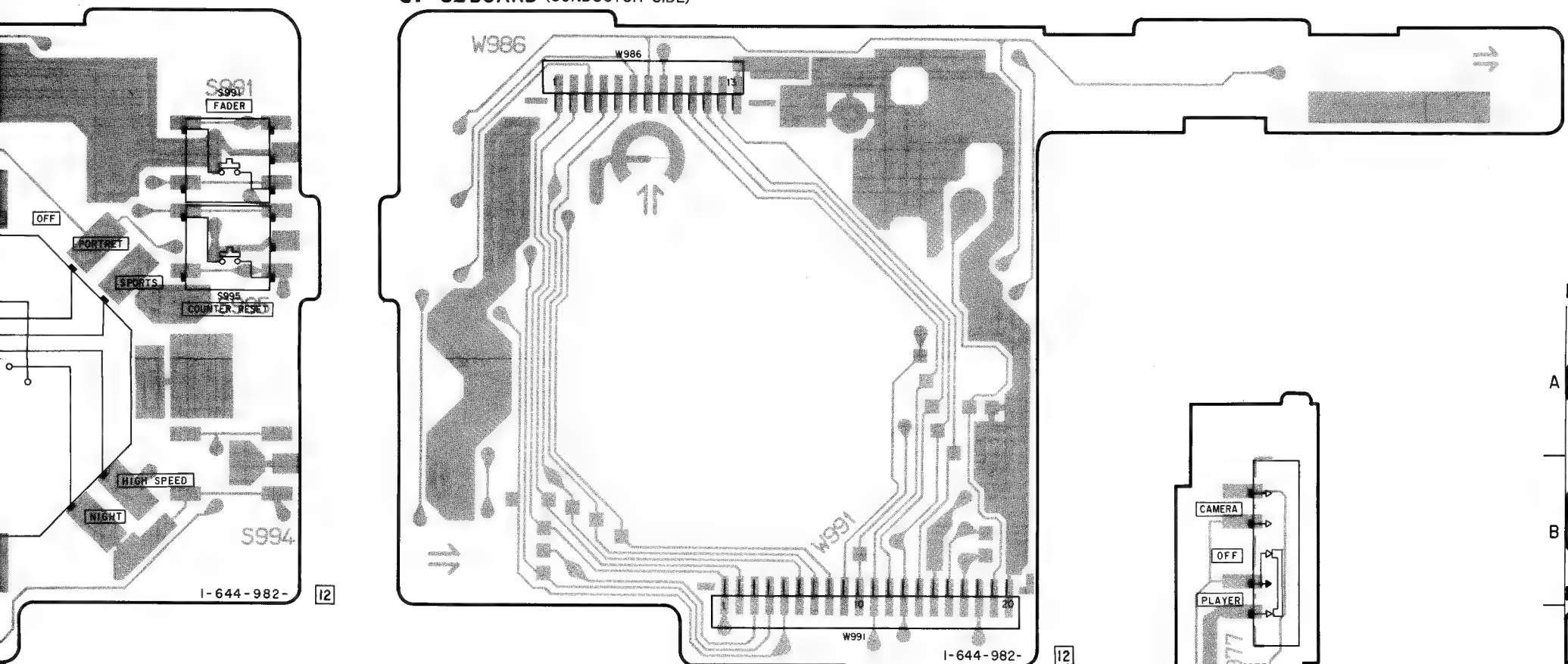
JK-91 BOARD (CONDUCTOR SIDE)



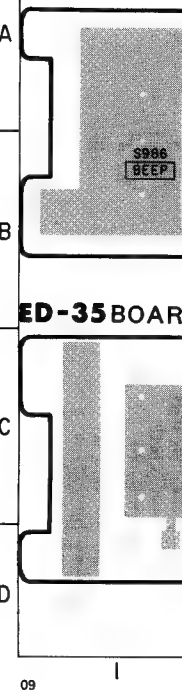
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D992 8-719-404-46 DIODE MA110

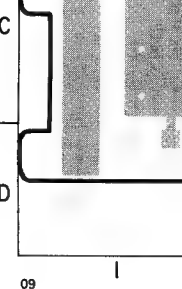
CF-32 BOARD (CONDUCTOR SIDE)



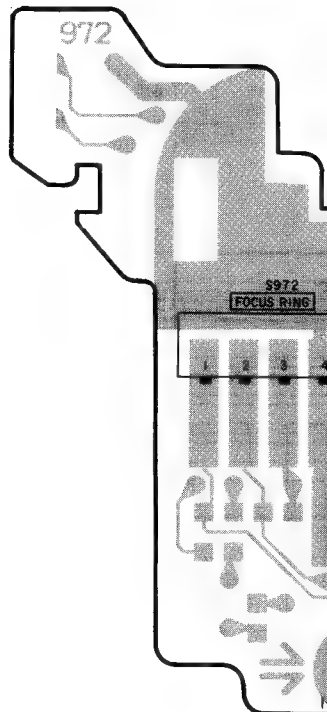
ED-35 BOARD



ED-35 BOARD

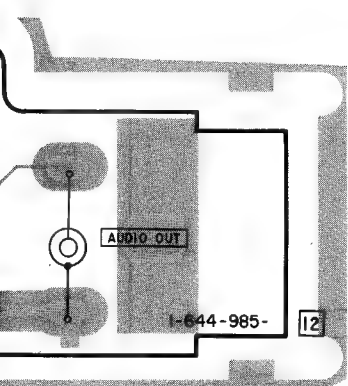


MF-191 BOARD (COMPONENT)



< DIODE >

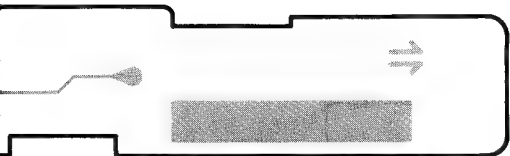
D976 8-719-404-46 DIODE MA110



I-644-980-

12

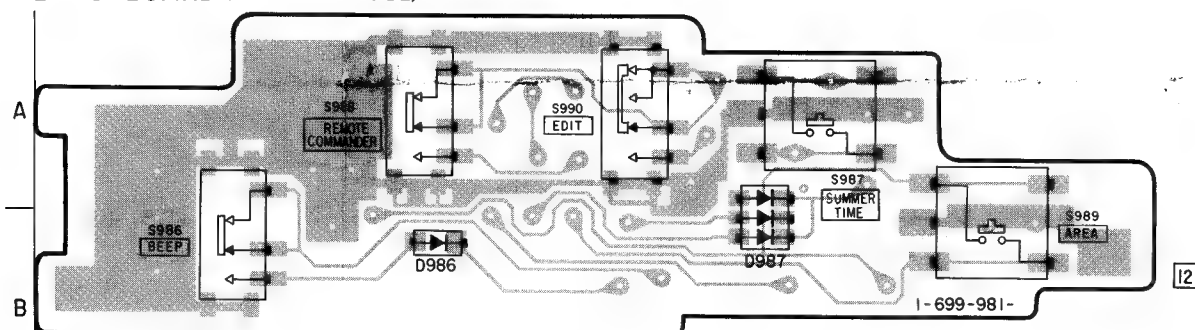
09



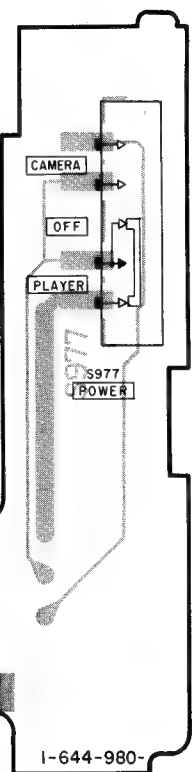
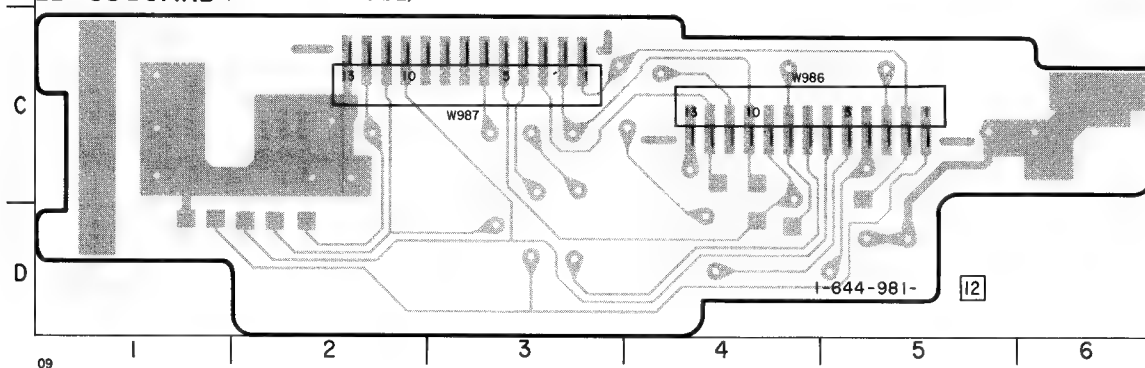
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D986 8-719-404-46 DIODE MA110
D987 8-719-404-40 DIODE MA121

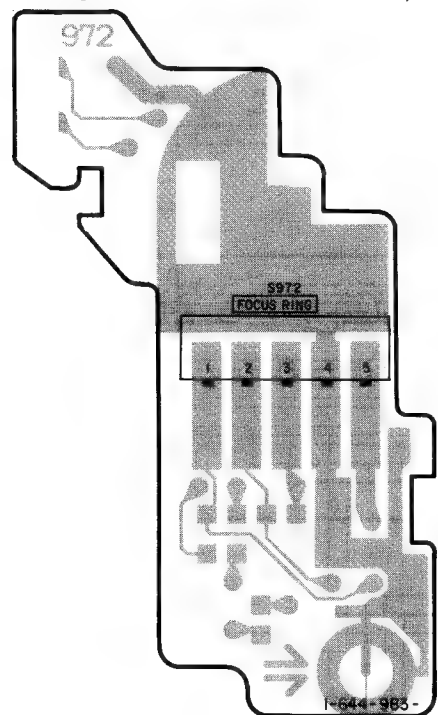
ED-35 BOARD (COMPONENT SIDE)



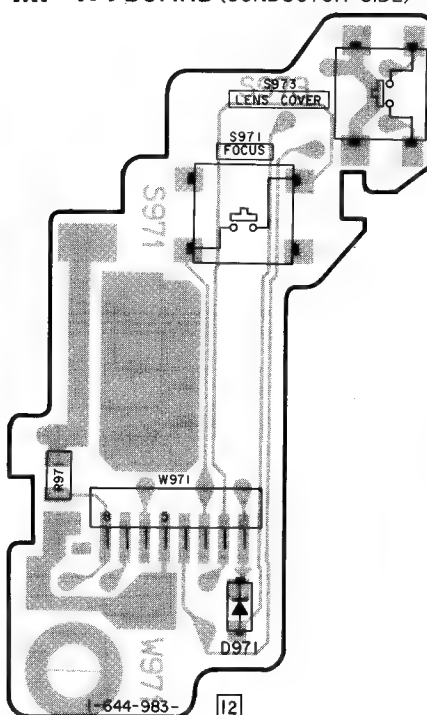
ED-35 BOARD (CONDUCTOR SIDE)



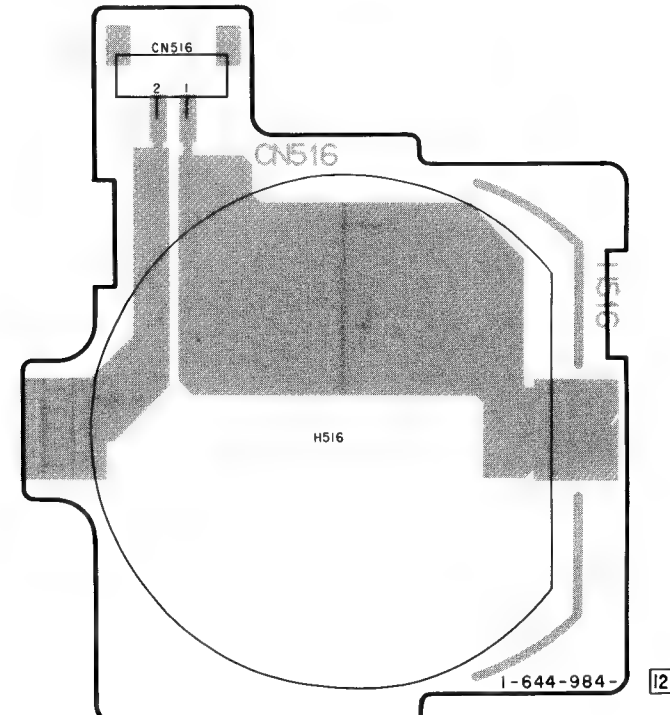
MF-191 BOARD (COMPONENT SIDE)



MF-191 BOARD (CONDUCTOR SIDE)



LI-44 BOARD (CONDUCTOR SIDE)

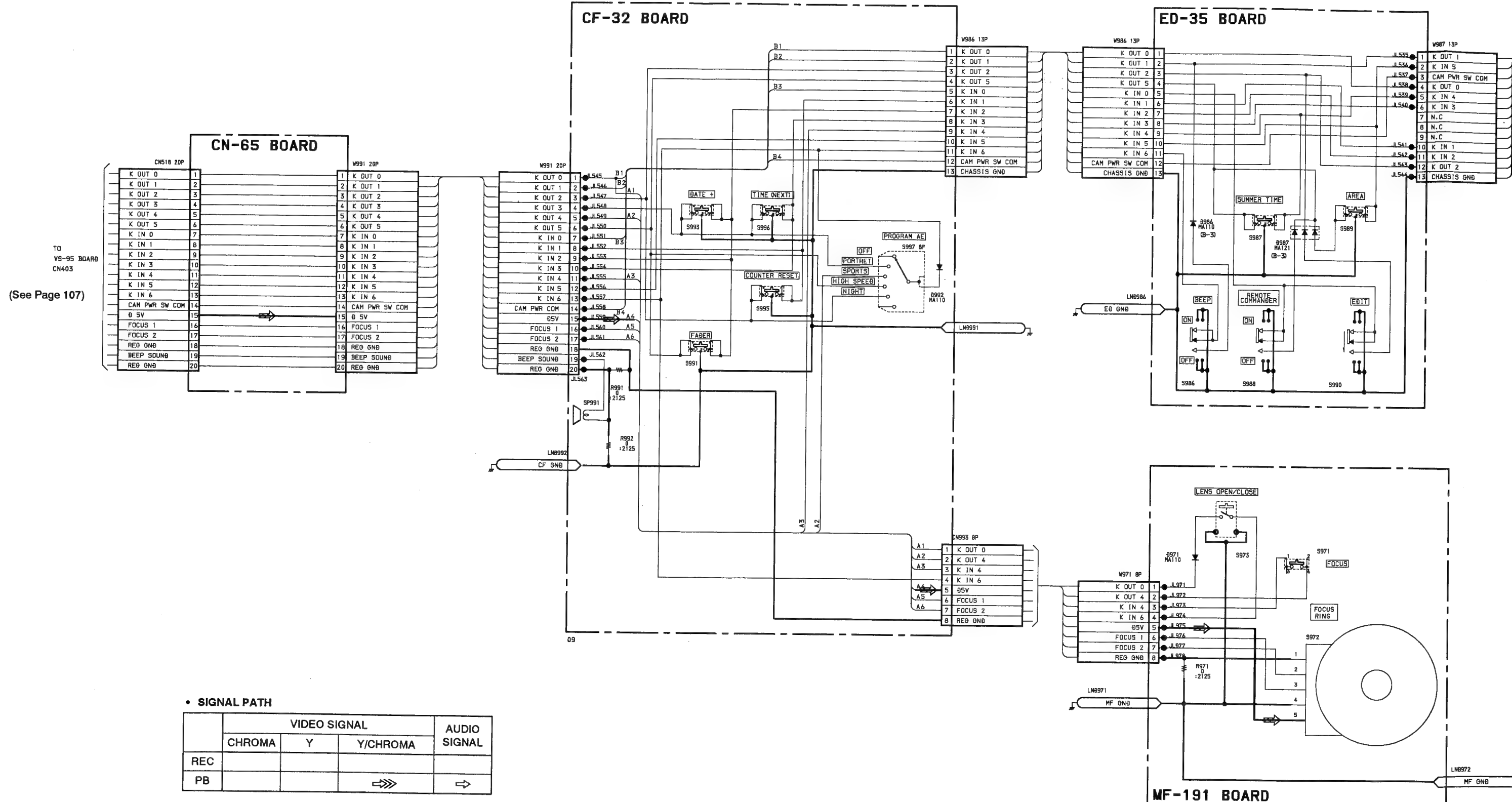


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D971 8-719-404-46 DIODE MA110

09

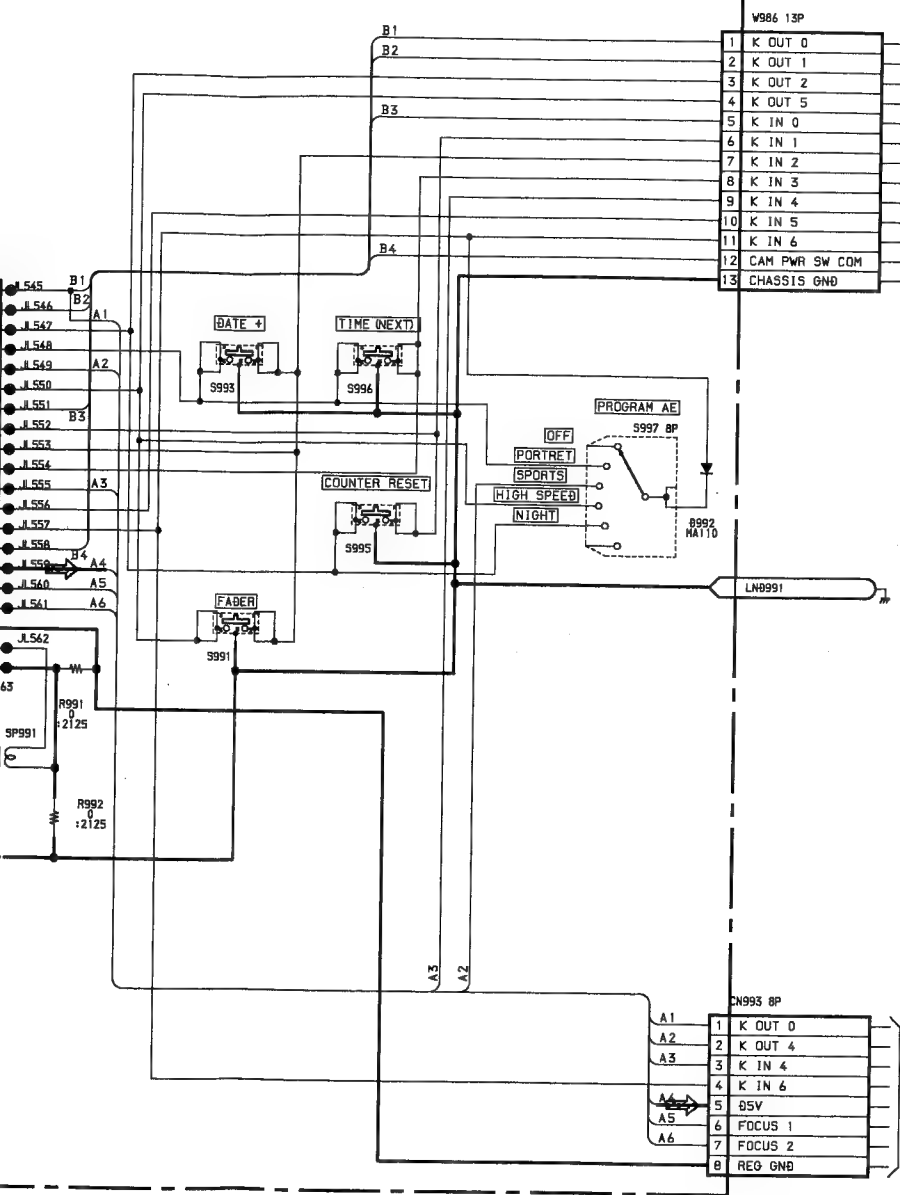
— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —



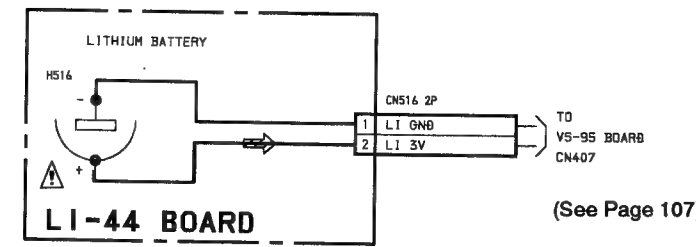
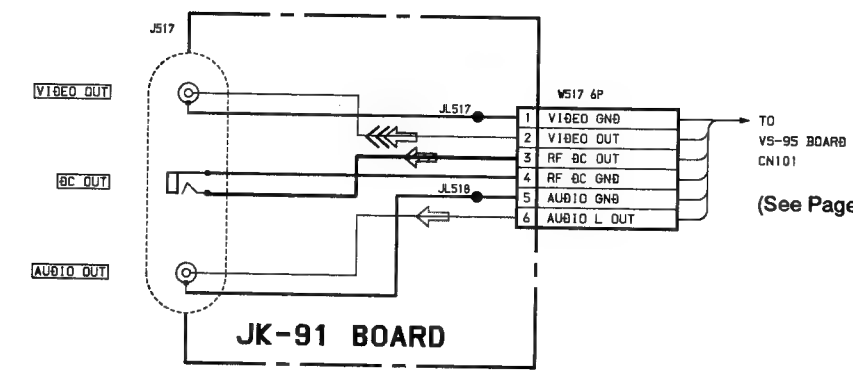
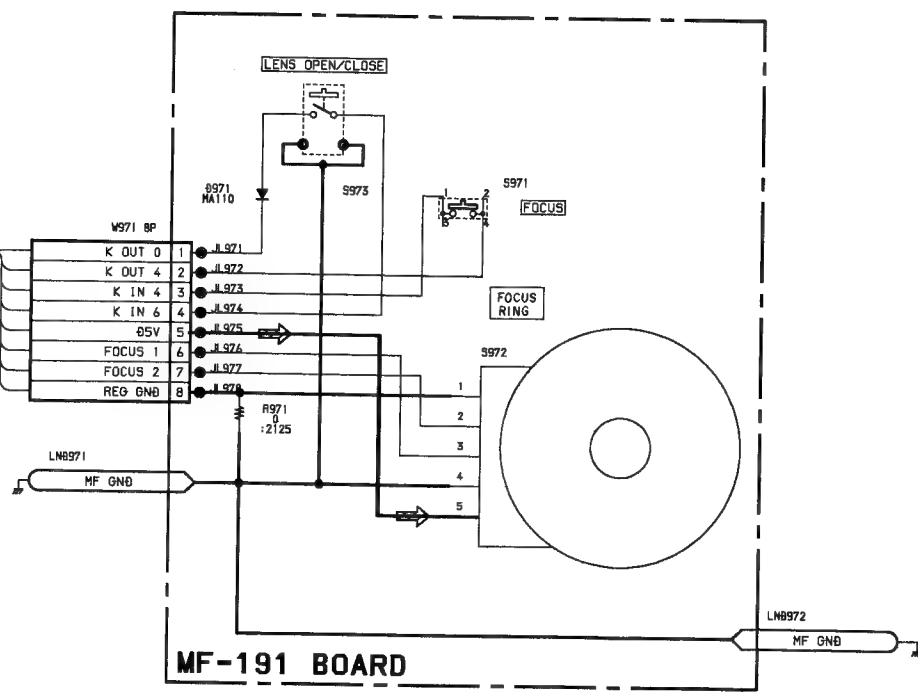
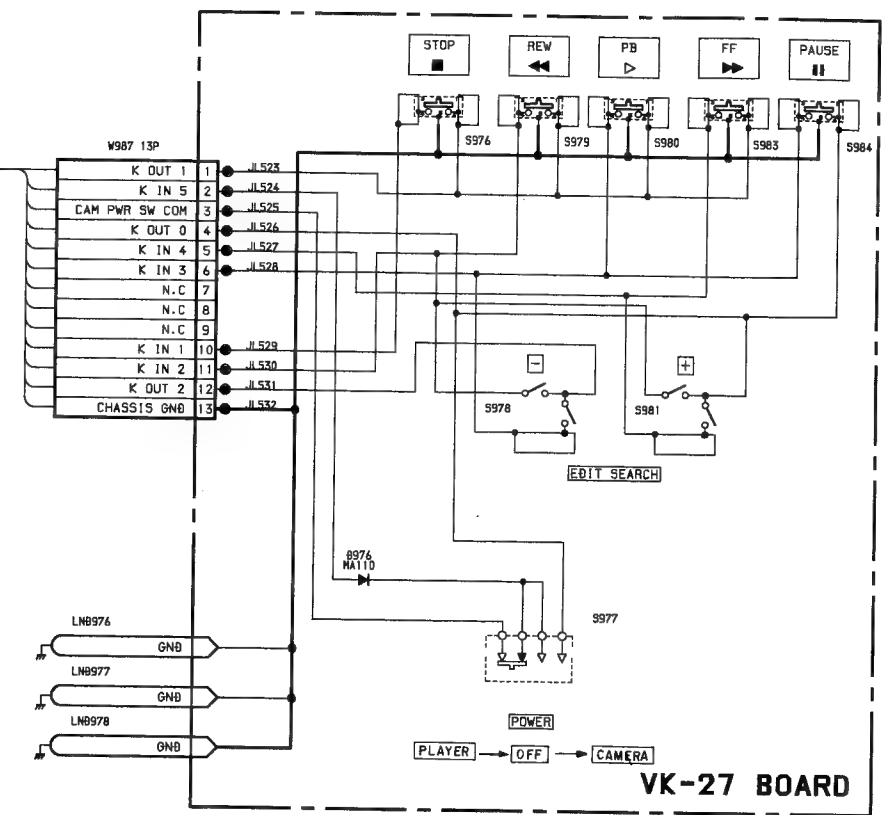
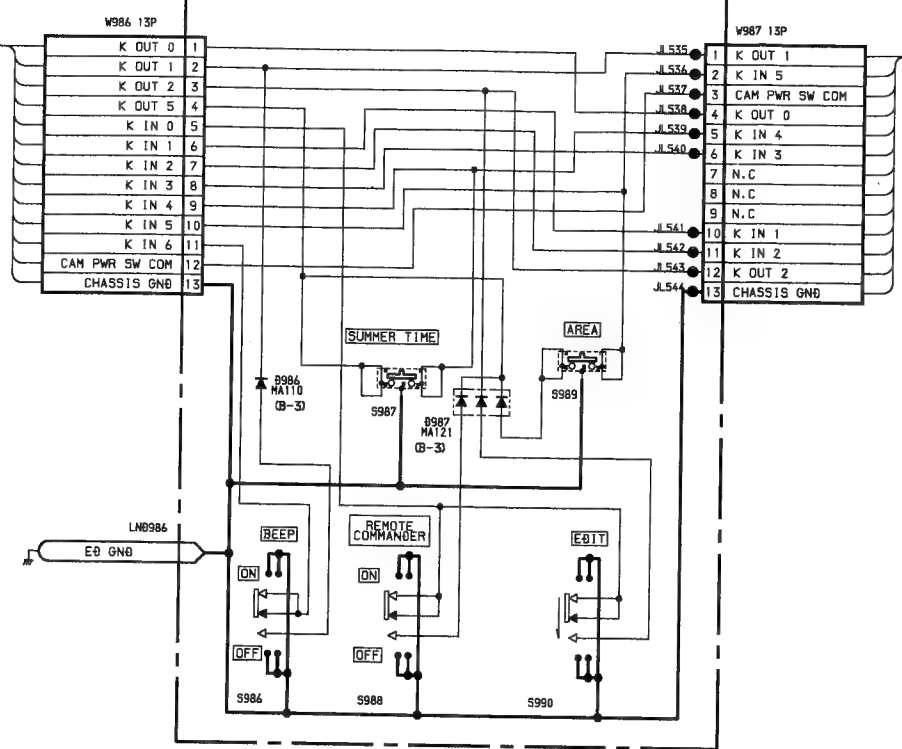
TCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITHIUM BATTERY HOLDER) SCHEMATIC DIAGRAMS

F-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —

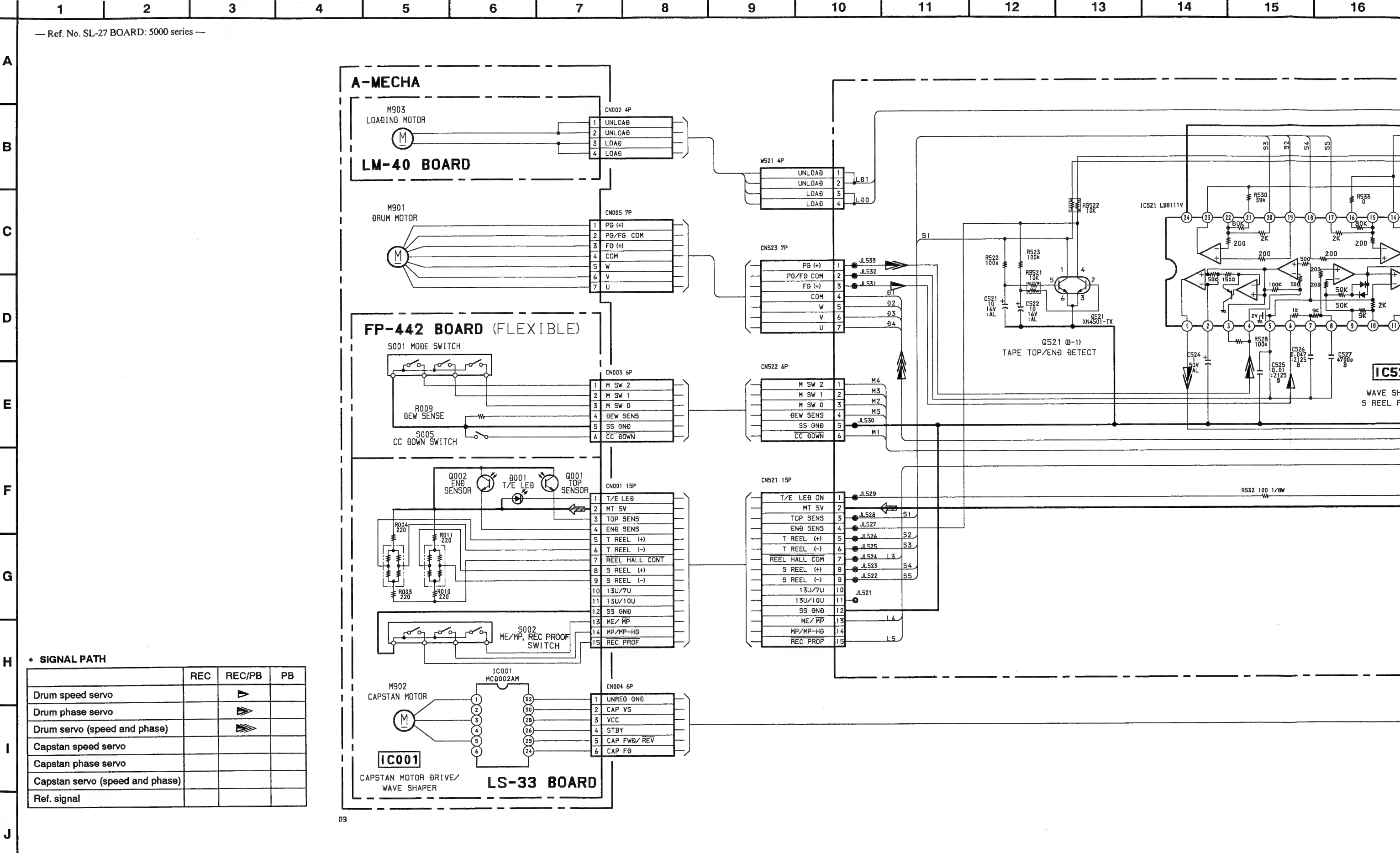
CF-32 BOARD



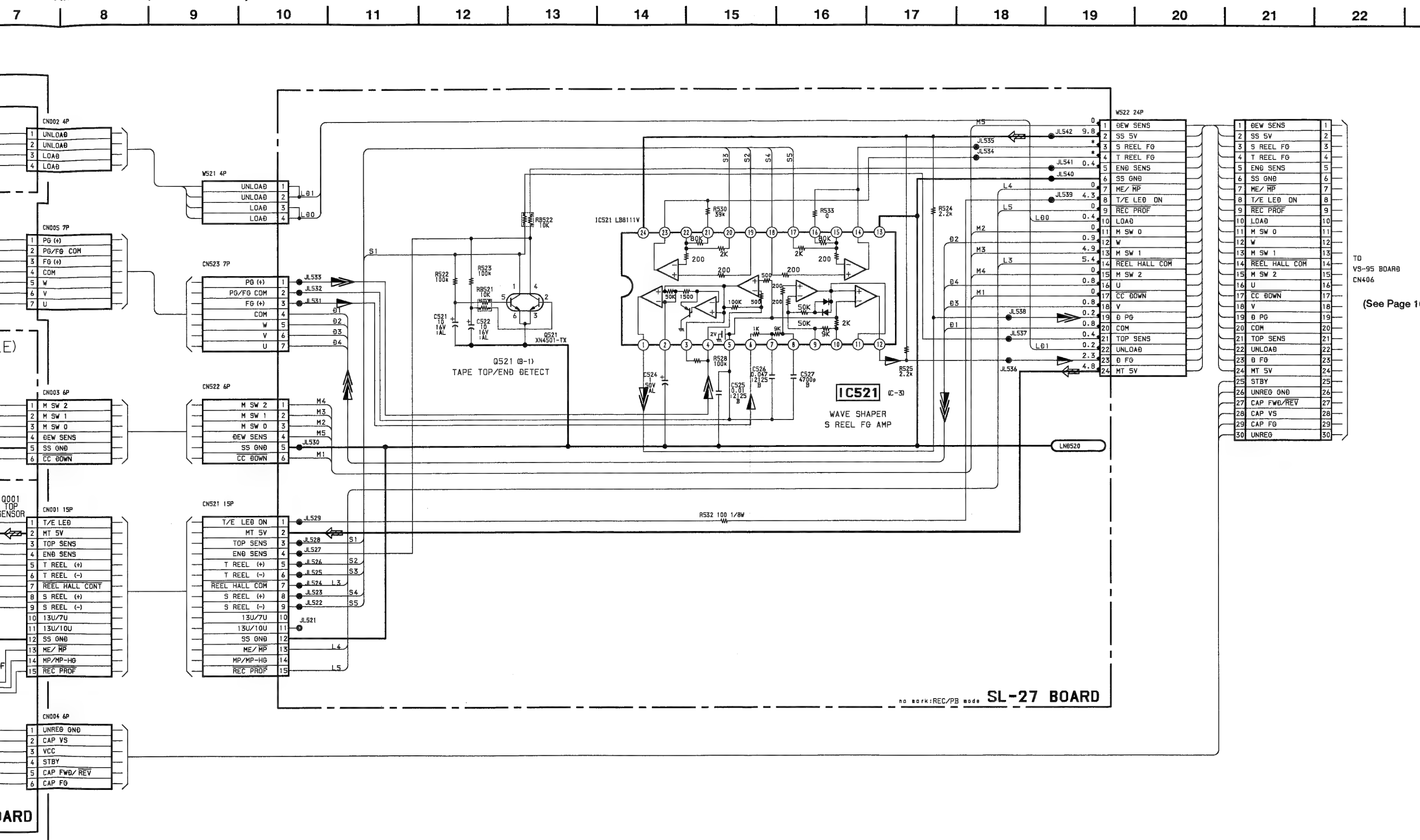
ED-35 BOARD



SL-27 (MECHA CONTROL), FP- 442(TAPE SENSOR), LM-40 (LOADING MOTOR DRIVE), LS-33 (CAPSTAN MOTOR DRIVE, TAPE SENSOR) SCHEMATIC DIAGRAMS



CAPSTAN MOTOR DRIVE, TAPE SENSOR) SCHEMATIC DIAGRAMS



TO
VS-95 BOARD
CN406

(See Page 108)

SL-27 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-27 BOARD: 5000 series —

- FP-442, LM-40, LS-33 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

• For printed wiring boards.

- SL-27 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● ○ Through hole is omitted.

Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.

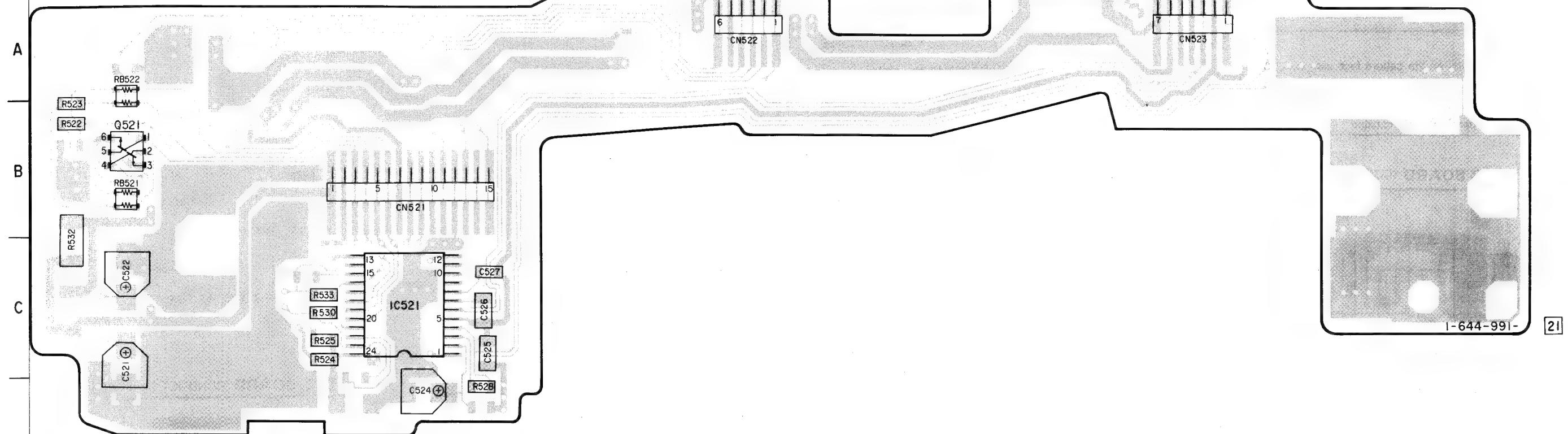
Parts face side: Parts on the parts face side seen from the parts face are indicated.

IC521 8-759-059-09 IC LB8111V

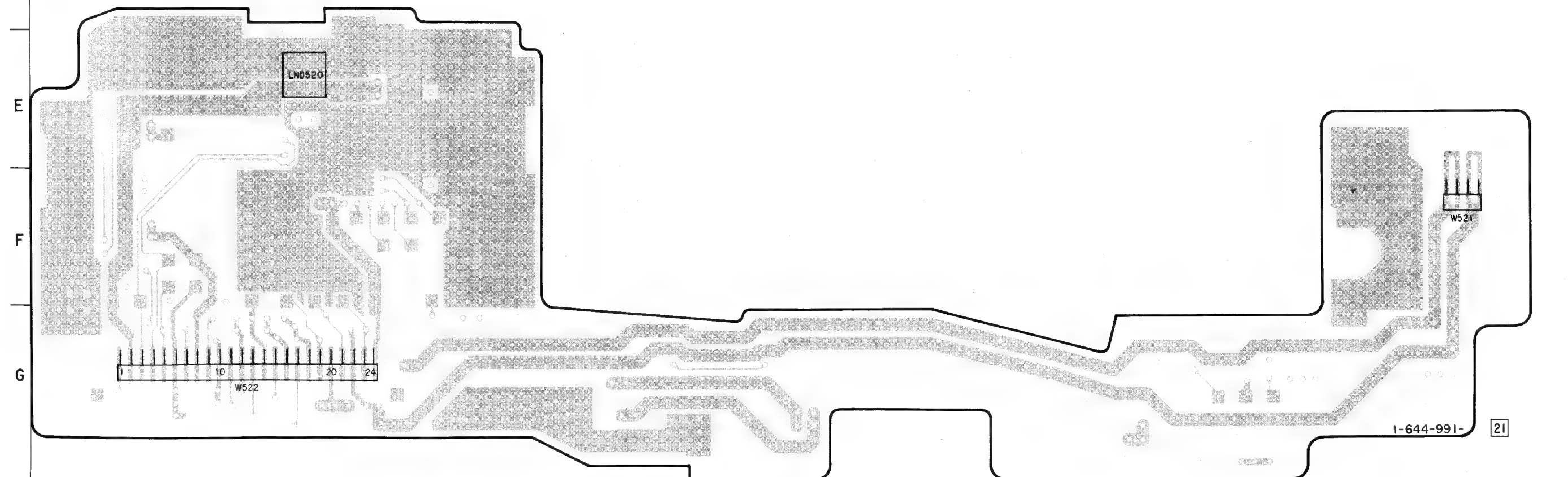
〈 TRANSISTOR 〉

Q521 8-729-402-81 TRANSISTOR XN4501

SL-27 BOARD (COMPONENT SIDE)



SL-27 BOARD (CONDUCTOR SIDE)



AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) PRINTED WIRING BOARDS

— Ref. No. AU-138, MA-149 BOARDS: 2000 series —

- For printed wiring boards.
- AU-138, MA-149 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from the (Component side) parts face are indicated.

< IC >

IC601 8-759-823-19 IC CXA1488R
IC602 8-749-923-29 IC RS-20E-T

< DIODE >

D552 8-719-404-46 DIODE MA110

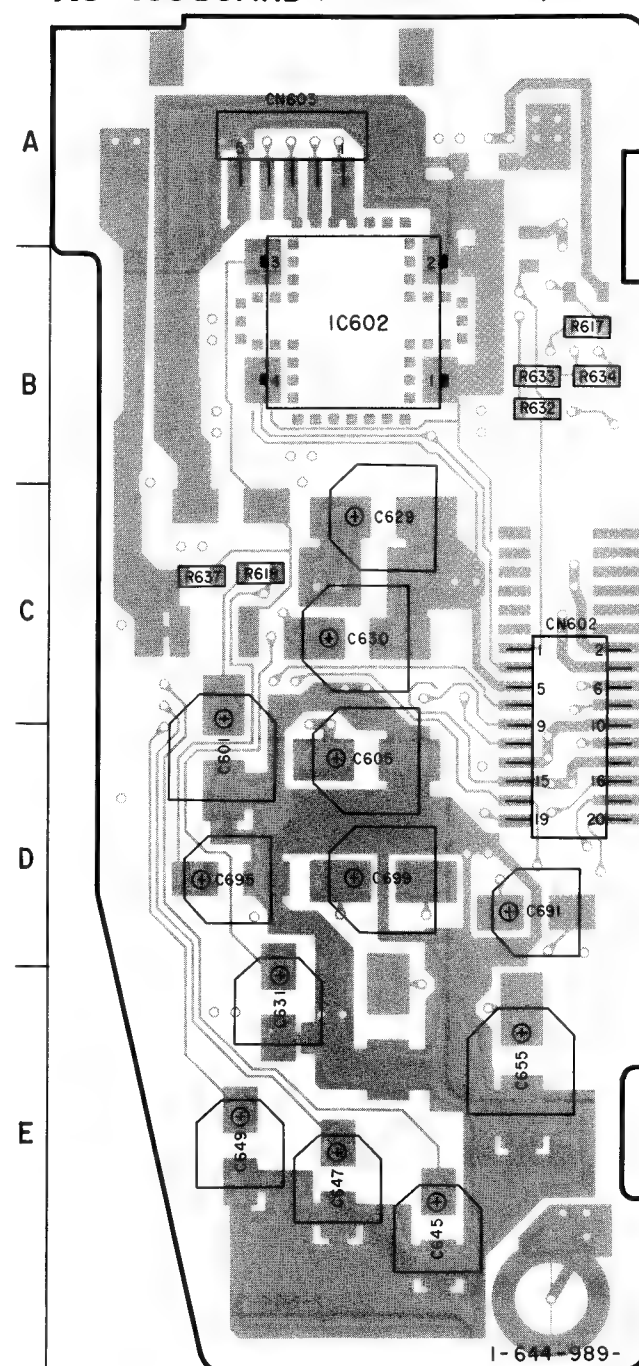
< IC >

IC551 8-759-822-37 IC LA7293M

< TRANSISTOR >

Q551 8-729-402-55 TRANSISTOR 2SB1218A-R

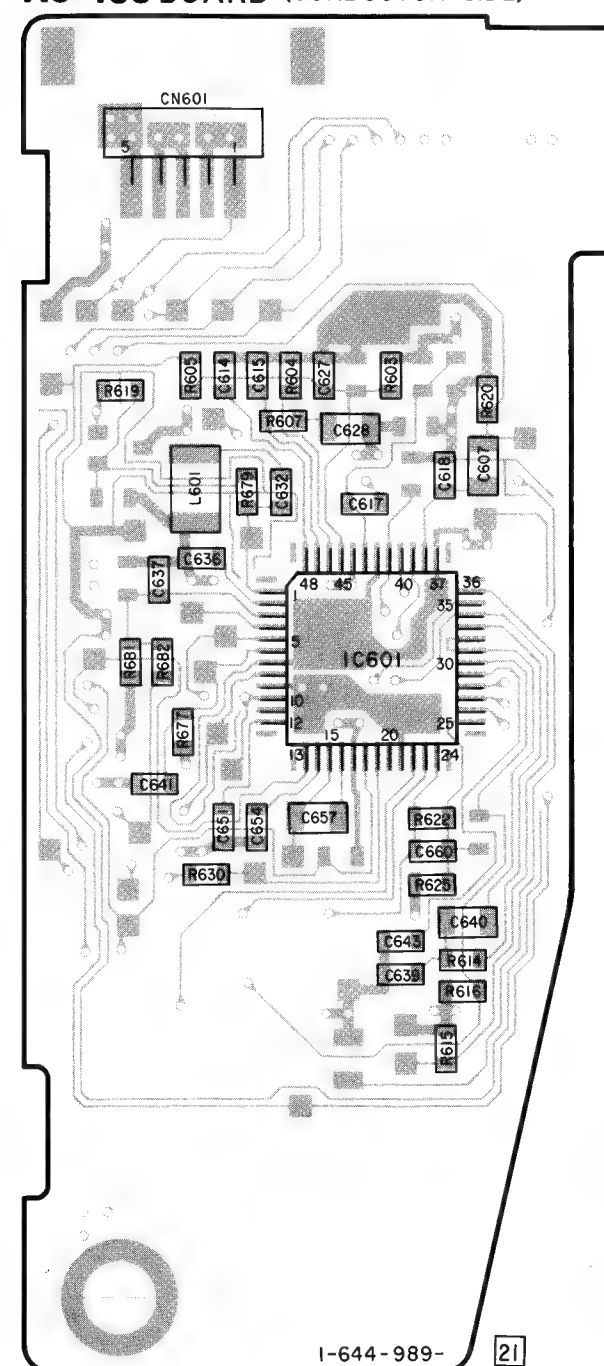
AU-138 BOARD (COMPONENT SIDE)



I-644-989-

[21]

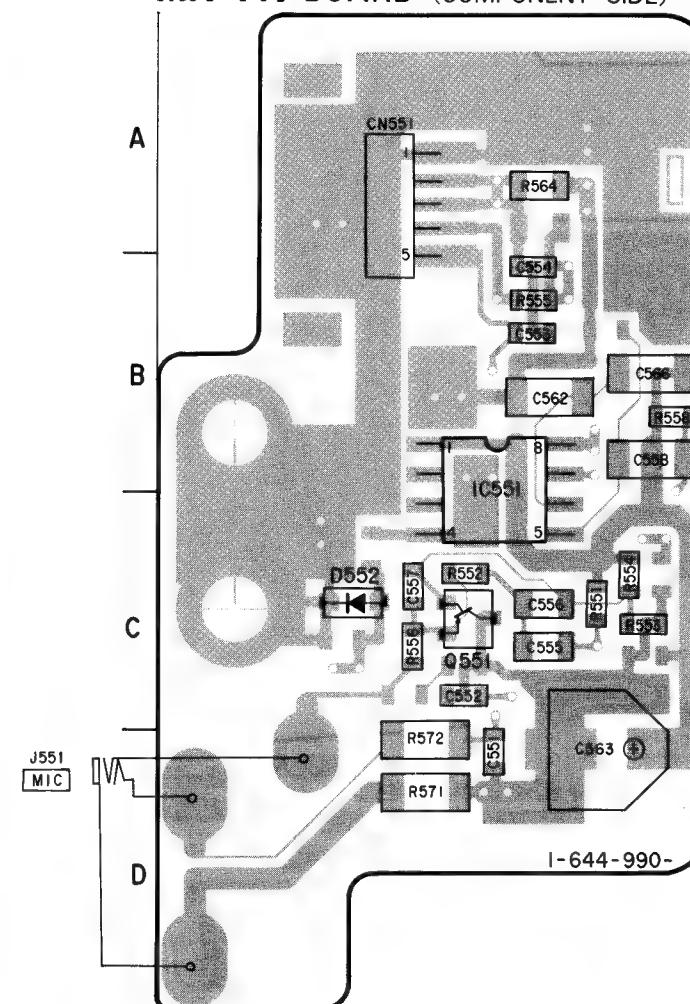
AU-138 BOARD (CONDUCTOR SIDE)



I-644-989-

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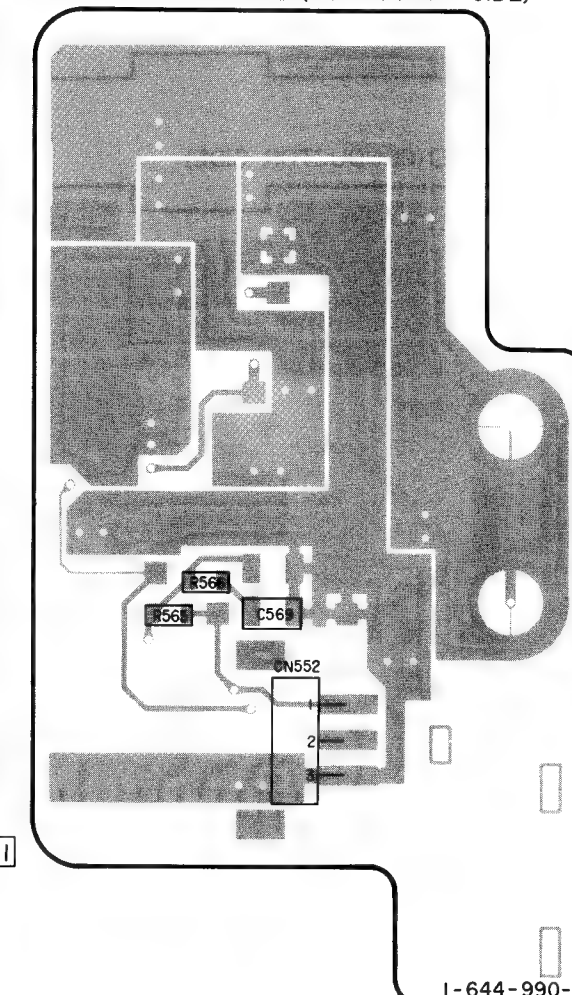
MA-149 BOARD (COMPONENT SIDE)



I-644-990-

[21]

MA-149 BOARD (CONDUCTOR SIDE)

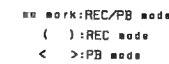


I-644-990-

[21]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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A	—
B	—
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D	—
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J	



09

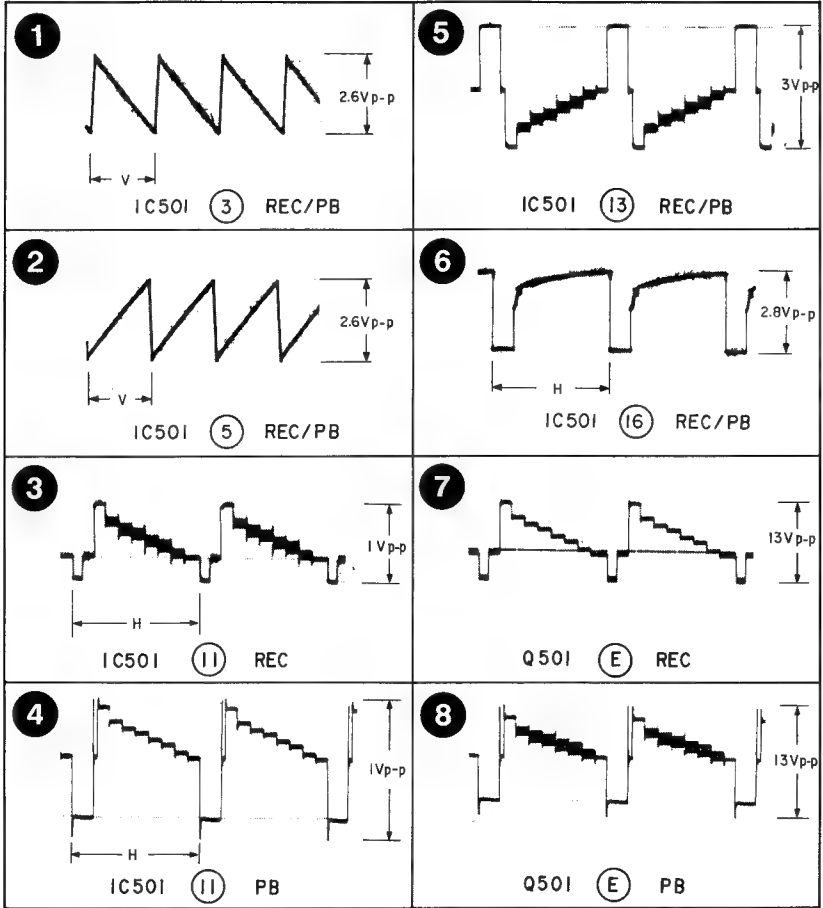


	CHRO
REC	
PB	



	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				➡

VF-42 BOARD



< DIODE >

D501	8-719-820-65	DIODE TLS221	
D502	8-719-984-02	LED	BR4371F
D503	8-719-400-20	DIODE MA152WA	

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IC501	8-759-420-01	IC AN2512S	
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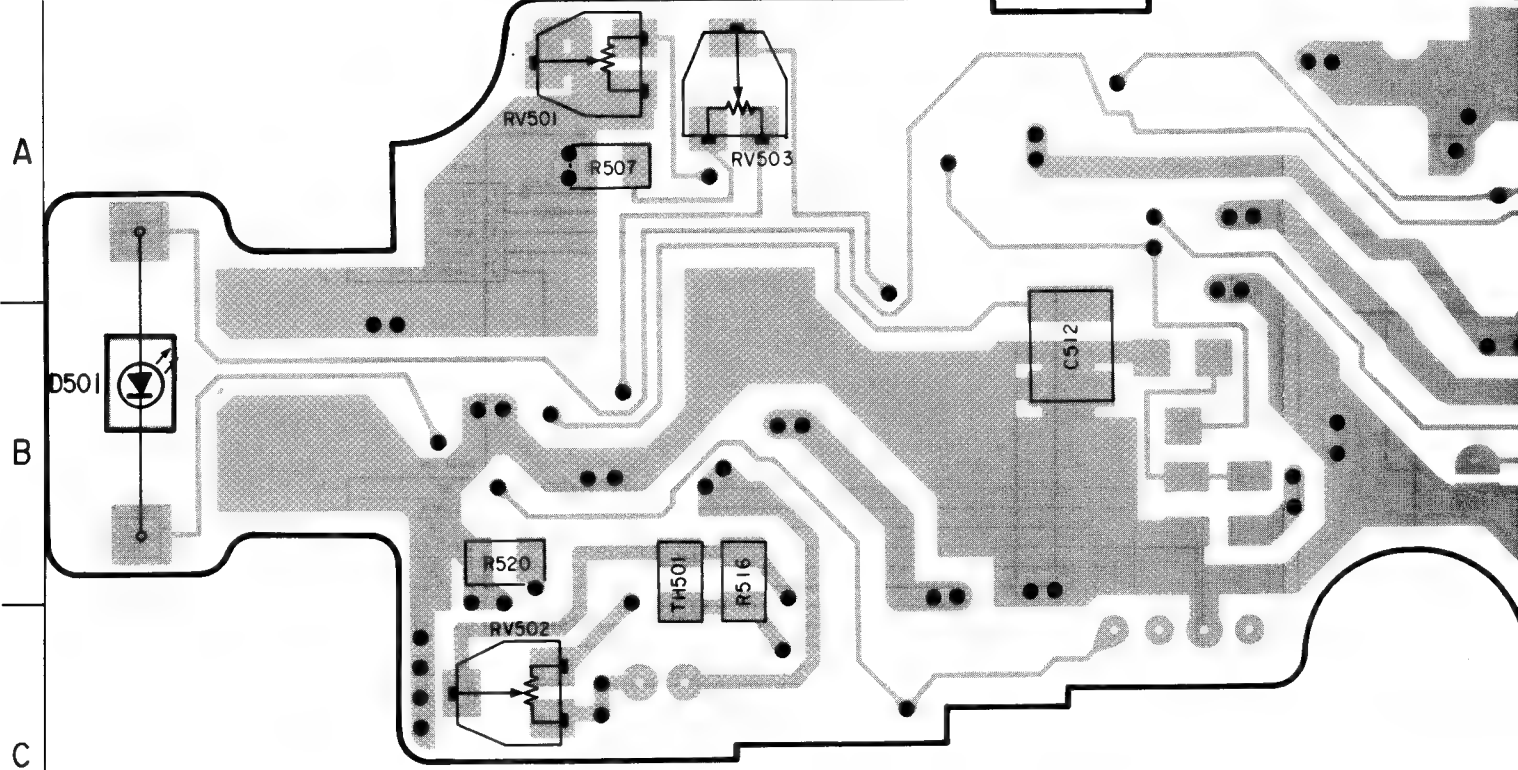
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Q501	8-729-100-66	TRANSISTOR 2SC1623	
Q502	8-729-216-31	TRANSISTOR 2SA1163-G	
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP	

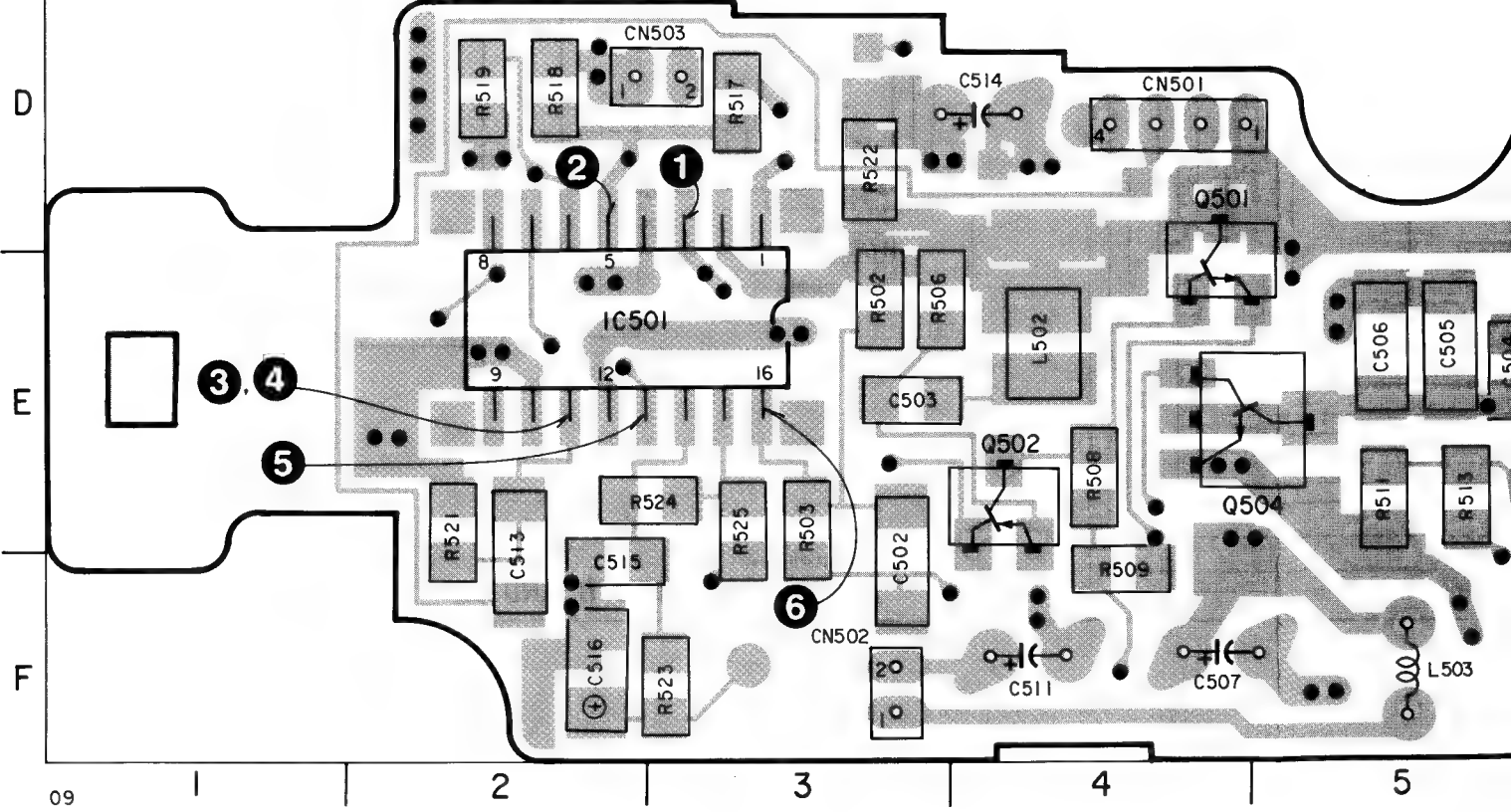
• For printed wiring boards.

Caution:	
Pattern face side:	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side:	Parts on the parts face side seen from the parts face are indicated.

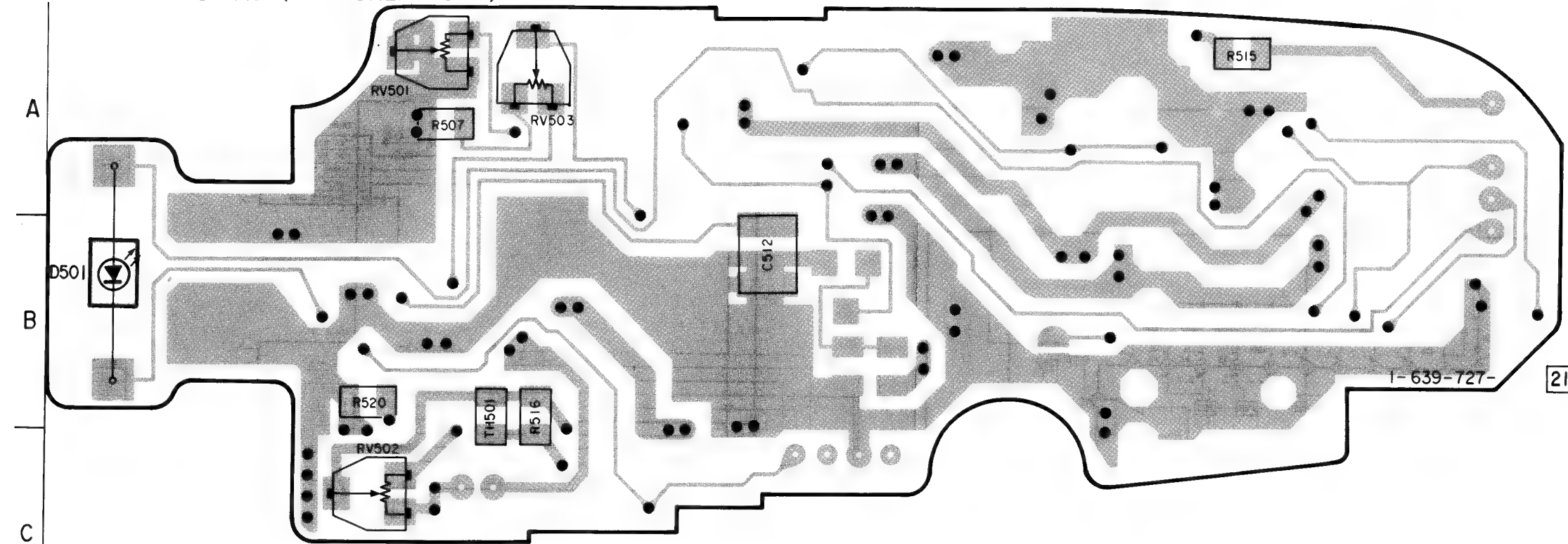
VF-42 BOARD (COMPONENT SIDE)



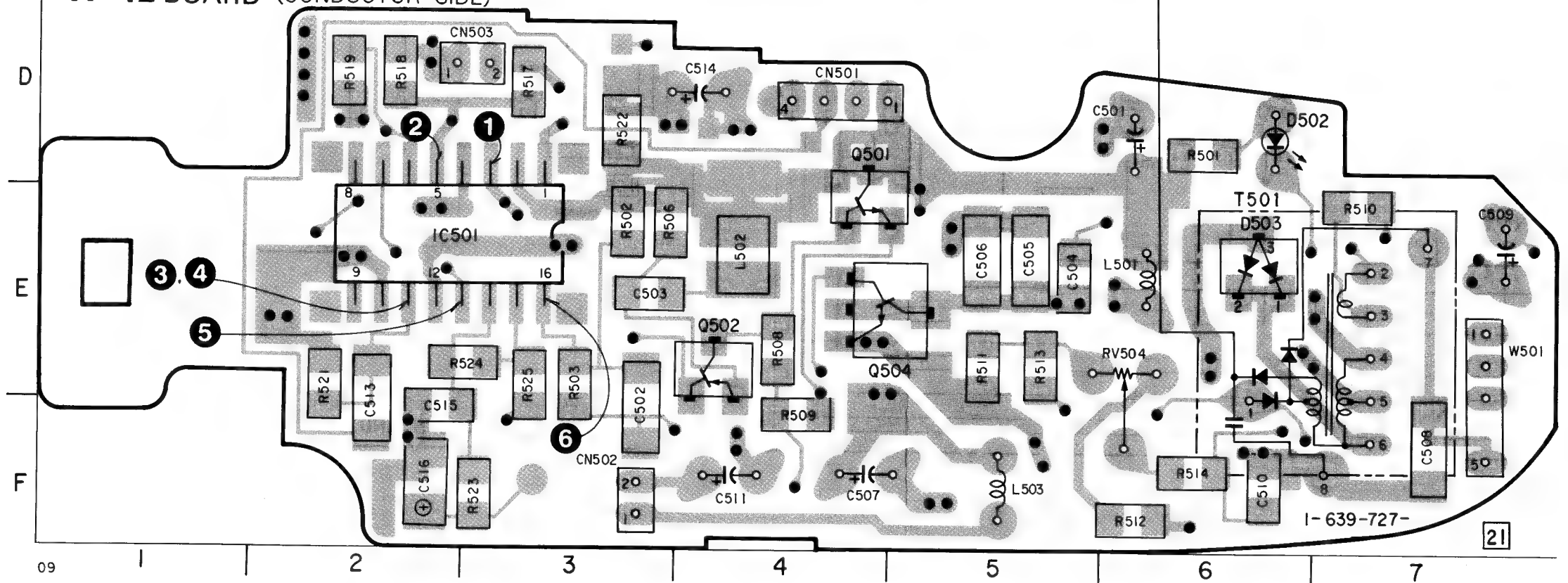
VF-42 BOARD (CONDUCTOR SIDE)



VF-42 BOARD (COMPONENT SIDE)



VF-42 BOARD (CONDUCTOR SIDE)



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

Д

3

2

D

References

11

G

4

1

J



	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇒⇒		



	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇒⇒		

DD-48 (POWER), SW-205 (CAMERA FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —

- For printed wiring boards.
- DD-48 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

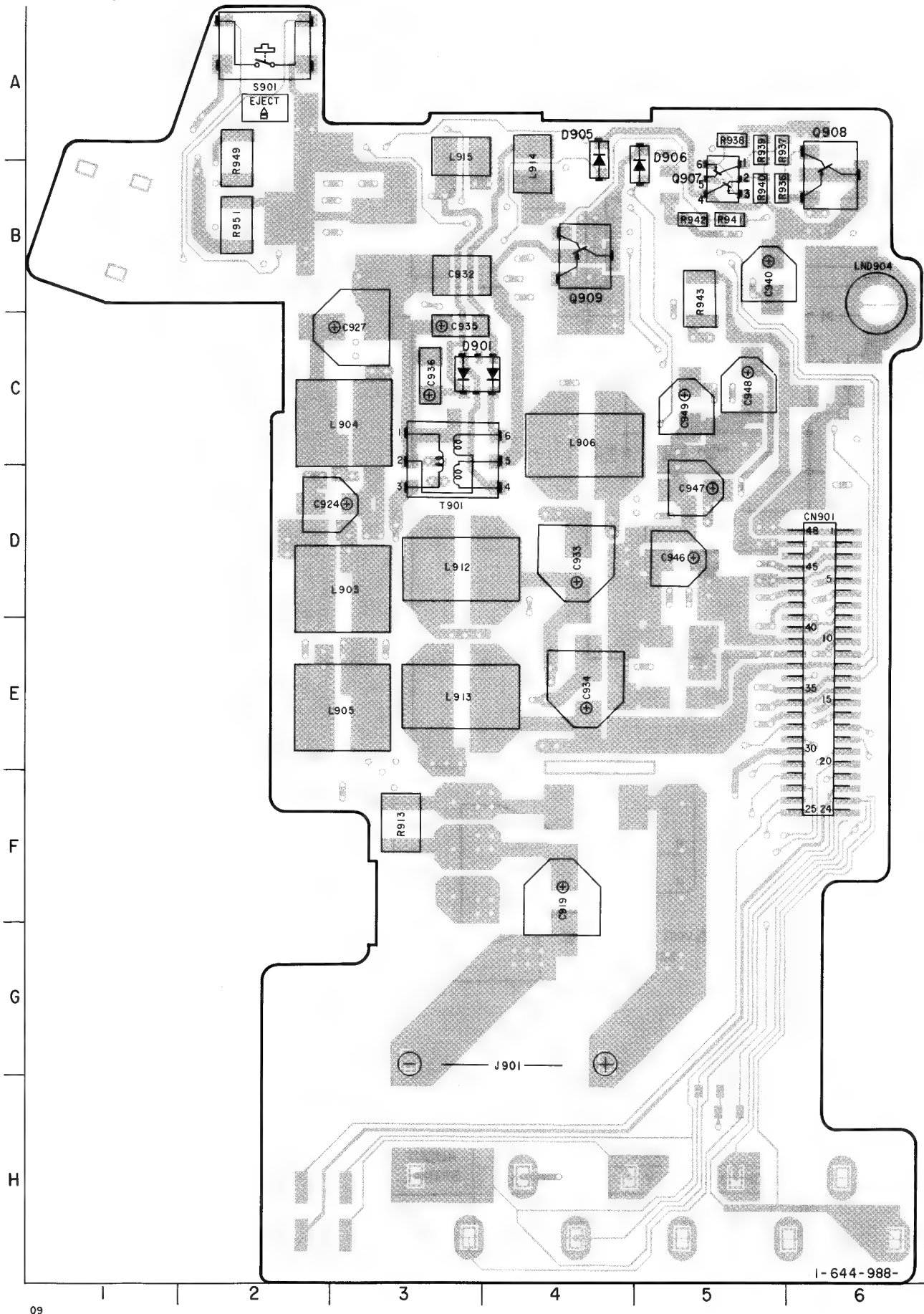
Caution:

Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Conductor Side)

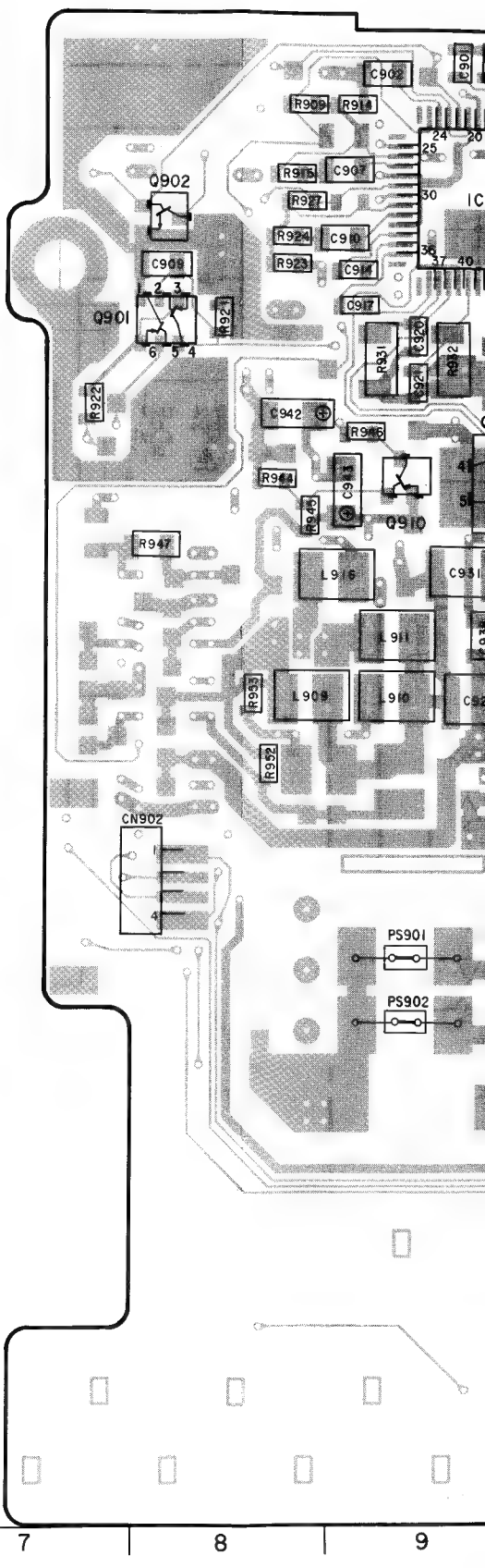
Parts face side: Parts on the parts face side seen from the (Component side) parts face are indicated.

- < DIODE >
- D901 8-719-981-59 DIODE FC805
D905 8-719-404-46 DIODE MA110
D906 8-719-404-46 DIODE MA110
- < IC >
- IC901 8-759-060-94 IC MB3785APFV-G-BND-ER
- < TRANSISTOR >
- Q901 8-729-403-27 TRANSISTOR XN4401
Q902 8-729-402-42 TRANSISTOR UN5213
Q903 8-729-823-84 TRANSISTOR FP102
Q904 8-729-804-41 TRANSISTOR 2SB1122-S
Q905 8-729-823-82 TRANSISTOR FP101
- Q906 8-729-823-82 TRANSISTOR FP101
Q907 8-729-402-81 TRANSISTOR XN4501
Q908 8-729-805-25 TRANSISTOR 2SB1121
Q909 8-729-805-25 TRANSISTOR 2SB1121
Q910 8-729-014-20 TRANSISTOR RN2304

DD-48 BOARD (COMPONENT SIDE)

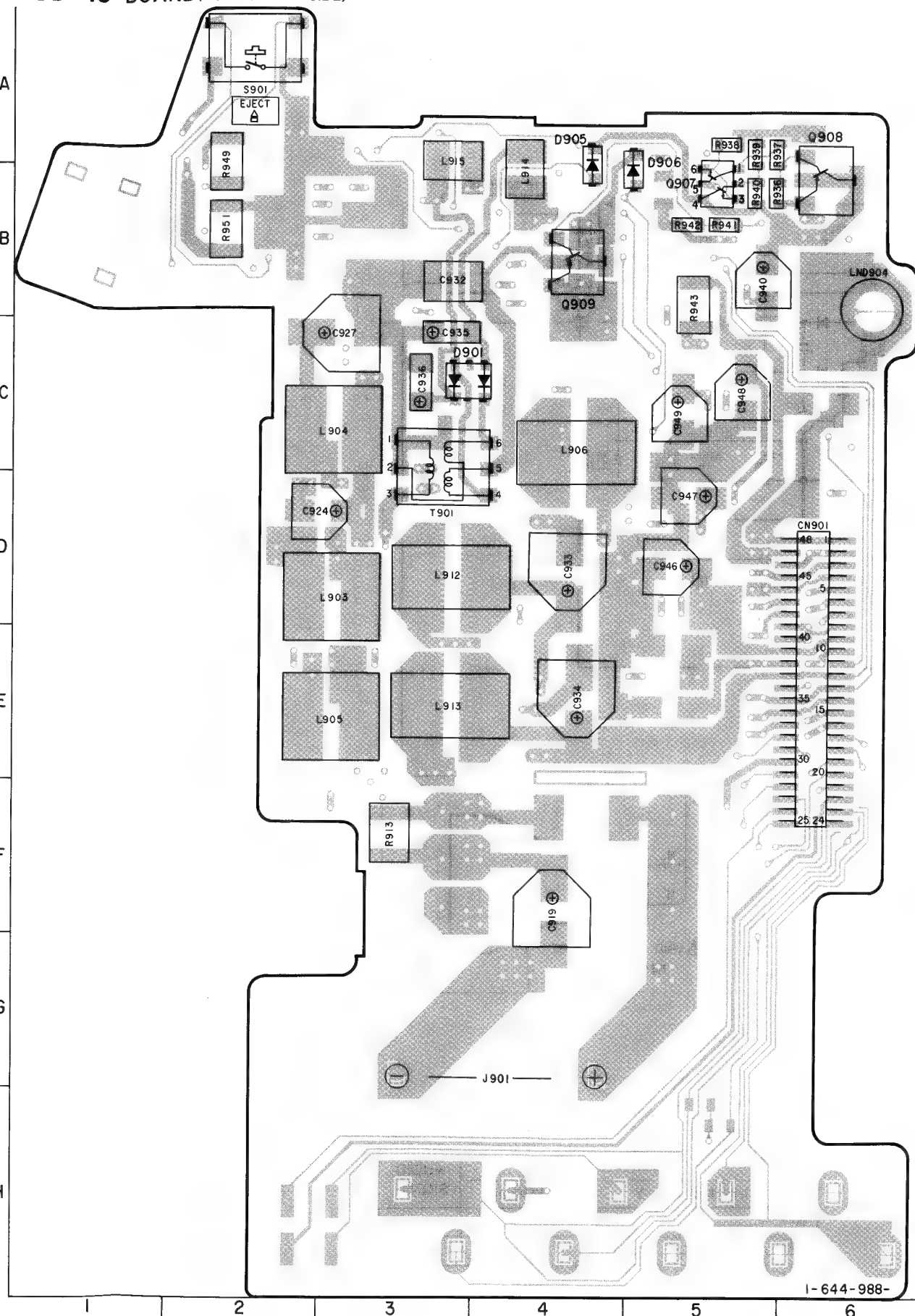


DD-48 BOARD (CONDUCTOR SIDE)

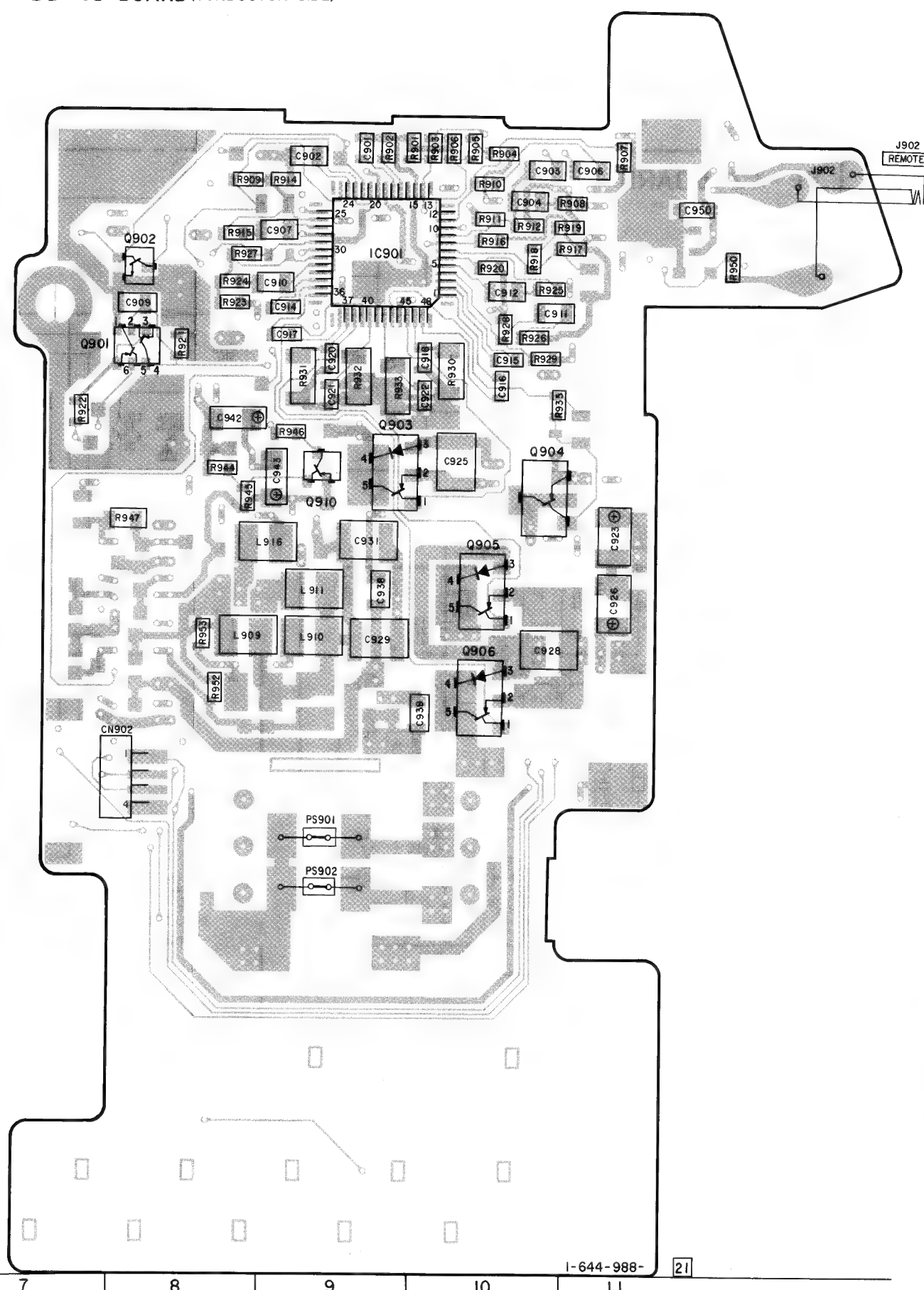


PRINTED WIRING BOARDS

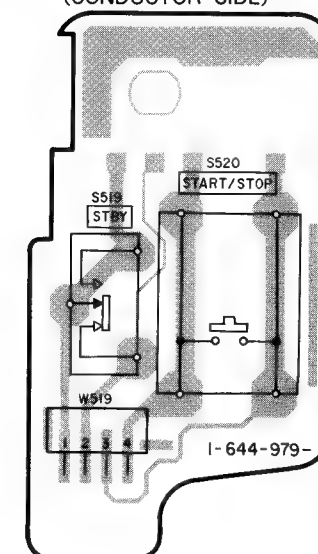
DD-48 BOARD (COMPONENT SIDE)



DD-48 BOARD (CONDUCTOR SIDE)



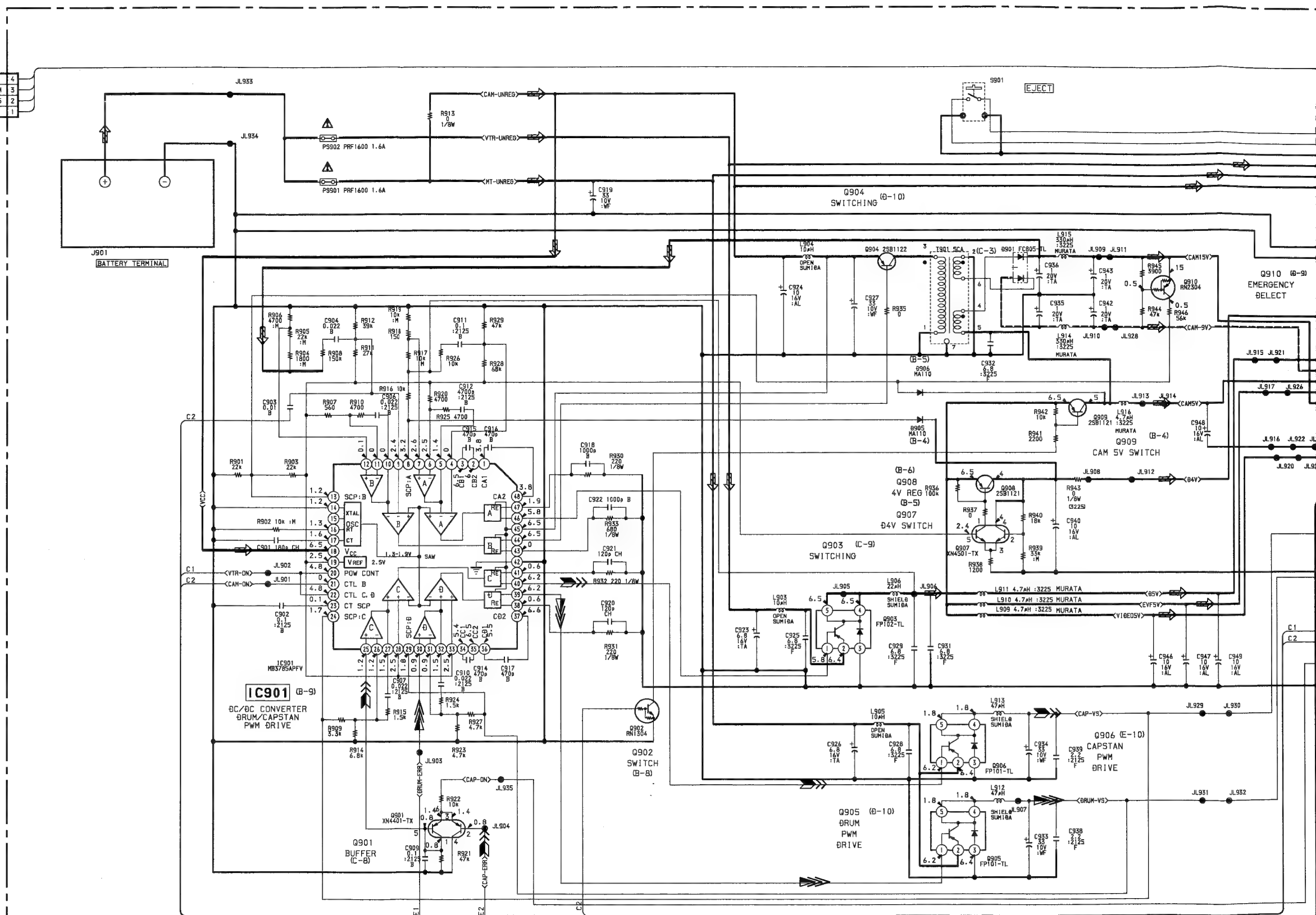
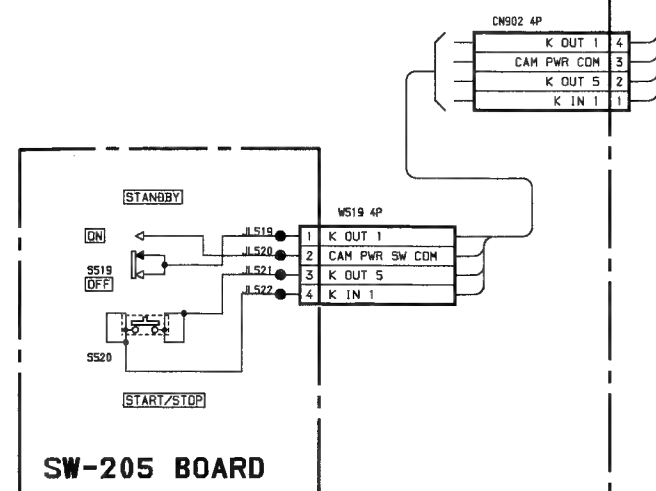
SW-205 BOARD (CONDUCTOR SIDE)

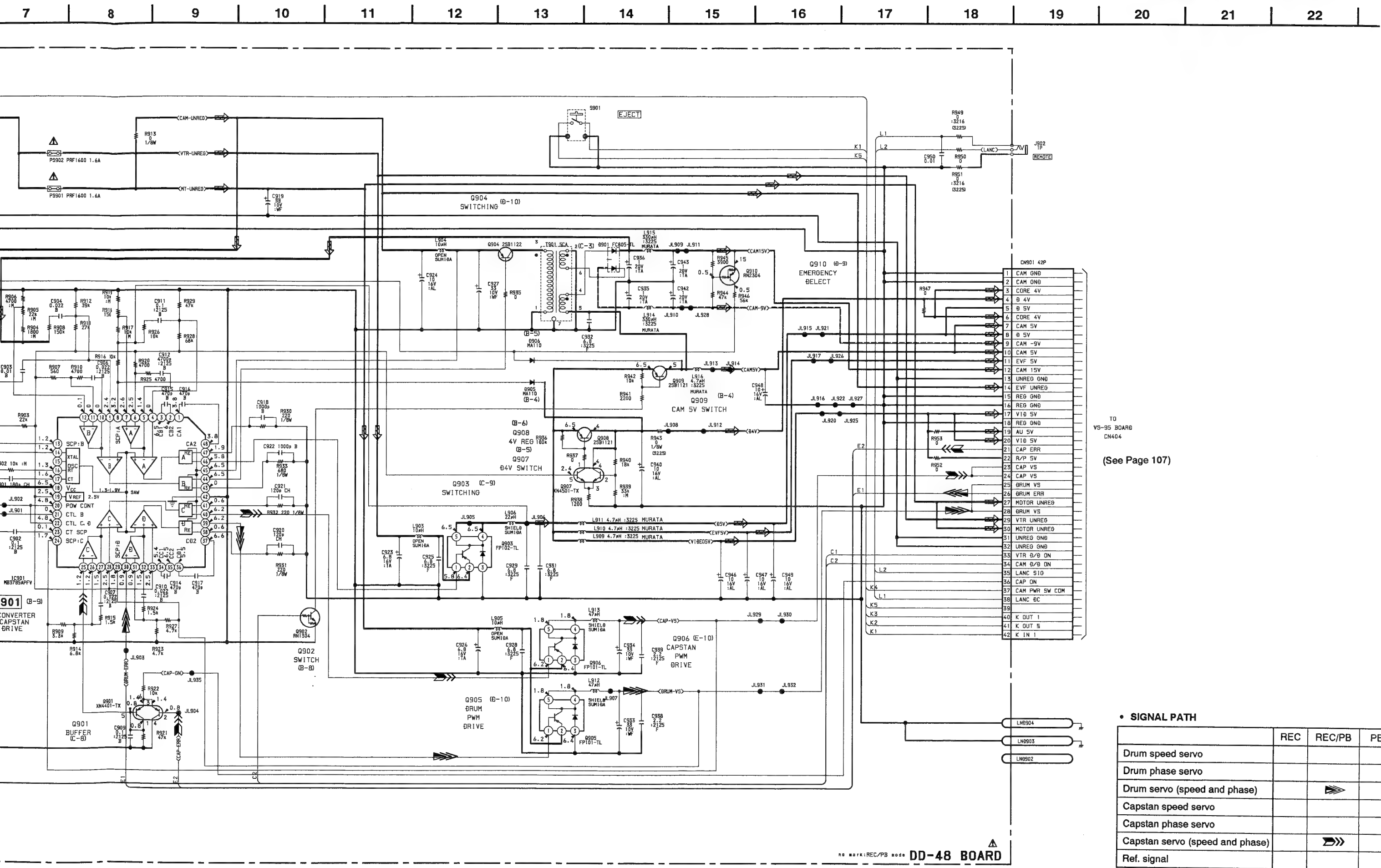


DD-48 (POWER), SW-205 (CAMERA FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —

A
B
C
D
E
F
G
H
I
J





(See Page 107)

• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		➡	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		➡	
Ref. signal			

4-3. SEMICONDUCTORS

AN2512S

(TOP VIEW)

BR9021AF
LM358DR

(TOP VIEW)

CXA1202R
CXA1208R
CXA1481AR
CXA1488R

(TOP VIEW)

CXA1211M
NJM2234M
NJM3414M

(TOP VIEW)

CXA1452N
CXL1506M

(TOP VIEW)

CXD2100Q
μPD75316GF

(MARKING SIDE VIEW)

CXD1250AN
CXD2104BN
M62353GP
MB88346BPFV
MPC1720VM
MPC1724VMEL
μPD7564G-540

(TOP VIEW)

CXP80624-428R/434R

(TOP VIEW)

LB1830M

(TOP VIEW)

LB8111V

(TOP VIEW)

LM324DR

(TOP VIEW)

RS-20E-T

(TOP VIEW)

TC7SU04F

(TOP VIEW)

TL1596CDB

(TOP VIEW)

FP101
FP102

(TOP VIEW)

XN4213
UMZ1

(TOP VIEW)

XN4312

(TOP VIEW)

XN4401
UMT1

(TOP VIEW)

XN4501
UMX1

(TOP VIEW)

XP4401

(TOP VIEW)

XP4601

(TOP VIEW)

FC805

(TOP VIEW)

MA110

(TOP VIEW)

TLS221

(TOP VIEW)

BR4371F

(TOP VIEW)

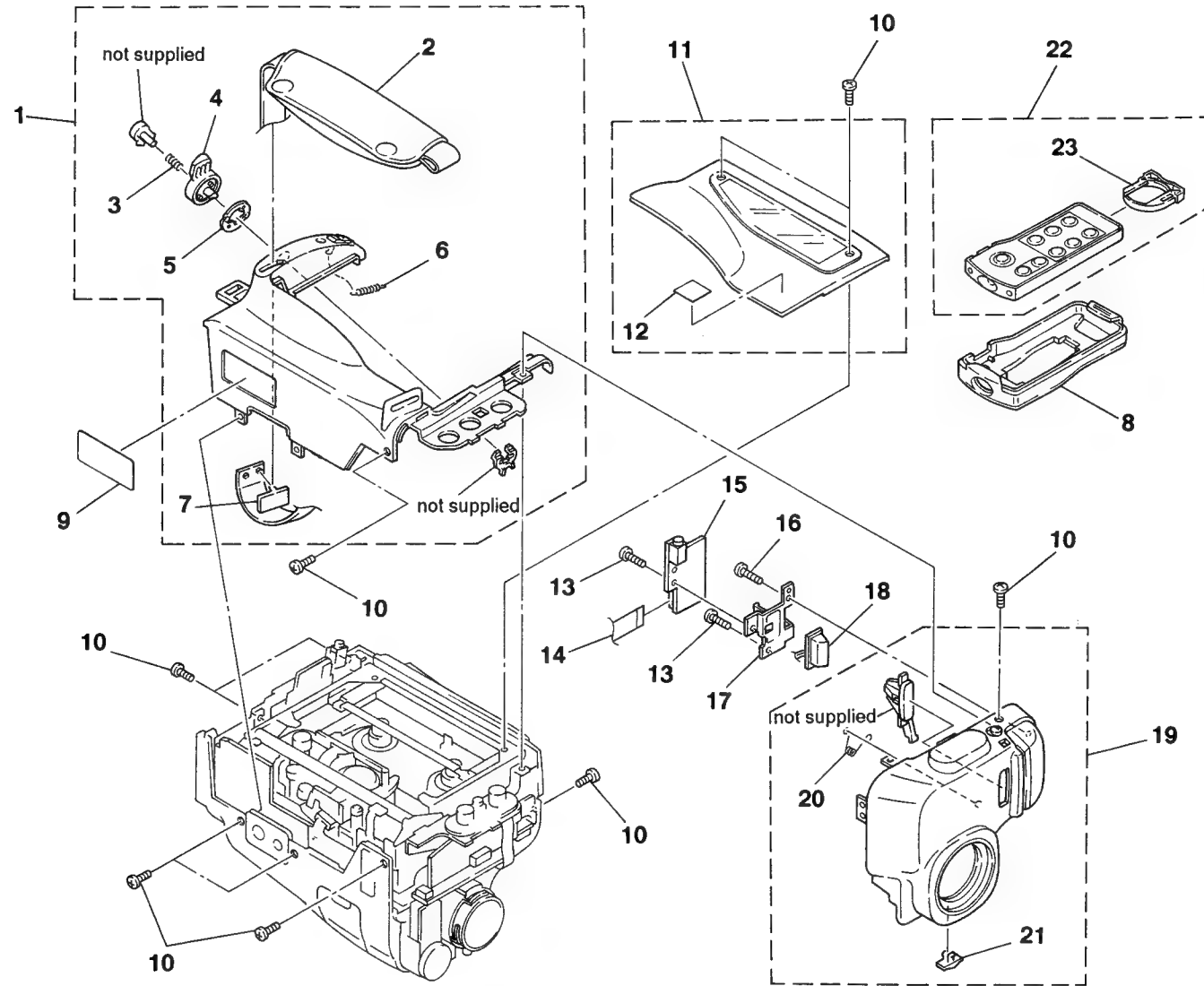
SECTION 5
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

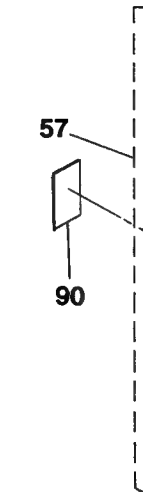
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

5-1. CABINET (L) AND F PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY		* 12	3-703-713-41	STICKER, SONY SYMBOL (10)	
2	3-736-807-01	BELT, GRIP		13	3-713-790-21	SCREW (M2X6), TAPPING, P3	
3	3-578-221-00	SPRING, COMPRESSION		14	1-696-487-11	CABLE, FLAT (FFC-90)	
4	3-942-985-01	KNOB, STAND-BY		15	A-7063-322-A	MA-149P BOARD, COMPLETE	
5	3-736-364-01	SPRING		16	3-719-601-01	SCREW (B2X5), TAPPING	
6	4-602-490-00	SPRING, TENSION		* 17	3-949-000-01	RETAINER, MICROPHONE	
7	3-942-895-01	STOPPER, BELT		18	A-7091-800-A	MICROPHONE UNIT	
8	3-943-154-11	HOLDER (B), REMOTE CONTROL		19	X-3941-891-2	PANEL ASSY, F	
* 9	3-949-861-01	LABEL, MODEL NUMBER (AEP)		20	3-947-357-01	SPRING, TORSION	
* 9	3-950-354-01	LABEL, MODEL NUMBER (UK, E, Australian)		21	3-945-269-01	KNOB, S	
10	3-719-381-01	SCREW (M2X4)		22	1-465-927-81	REMOTE COMMANDER (CAM CORDER) (RMT-507)	
11	X-3942-139-1	LID ASSY, CASSETTE		23	3-708-412-01	LID, REMOTE COMMANDER	

5-2. CABINET (R) AND F PANEL ASSEMBLIES





Ref. No.	Part No.	Description
51	A-70	
52	A-70	
53	A-70	
54	A-70	
55	3-71	
56	3-74	
57	X-39	
58	3-94	
59	3-94	
60	3-42	
61	3-94	
62	3-30	
63	3-94	
64	3-94	
65	3-94	
66	3-94	
67	3-74	
68	3-74	
69	3-74	
70	3-71	
71	3-94	
* 72	3-94	
73	3-74	
74	3-74	

SECTION 5
EXPLODED VIEWS

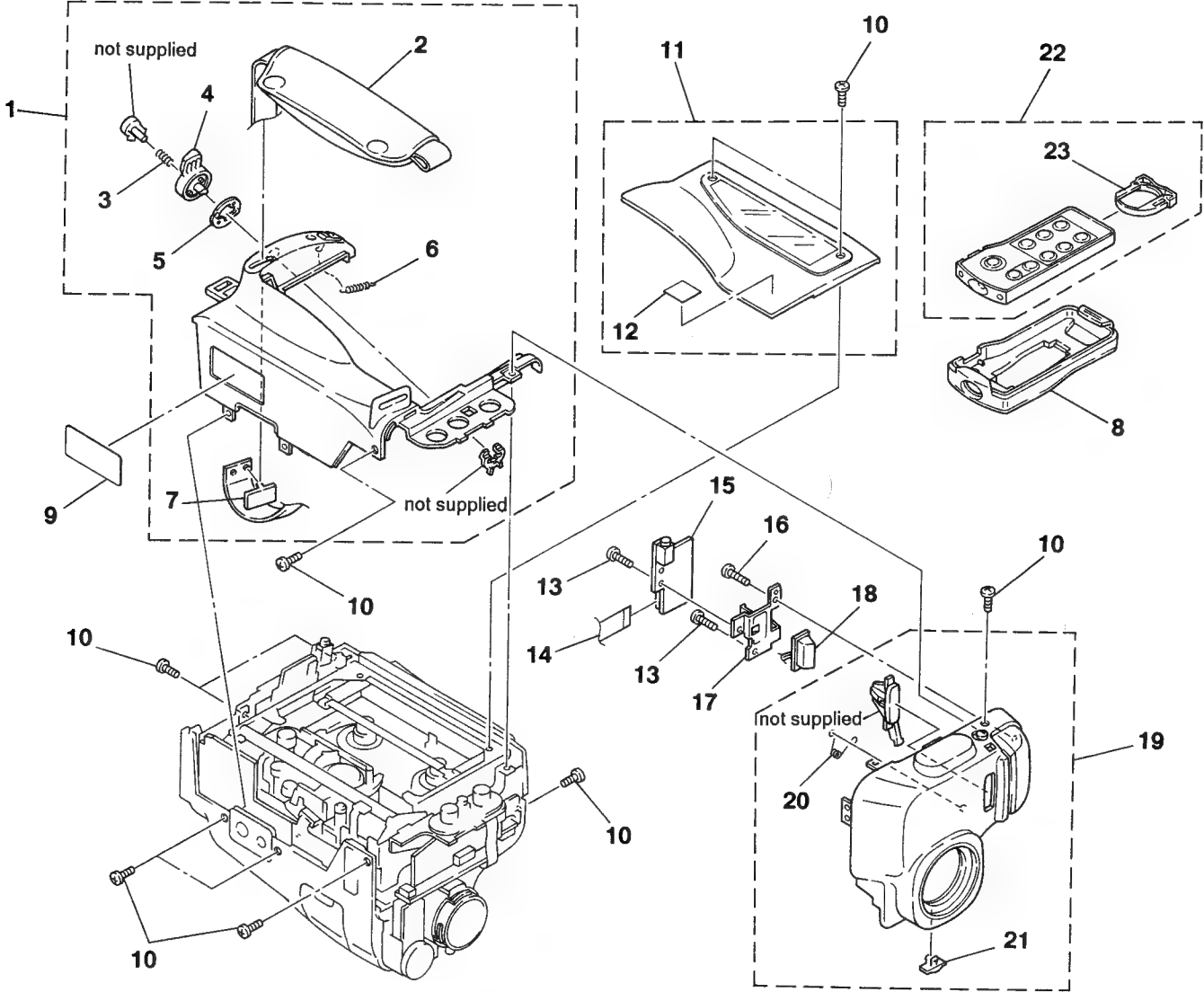
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

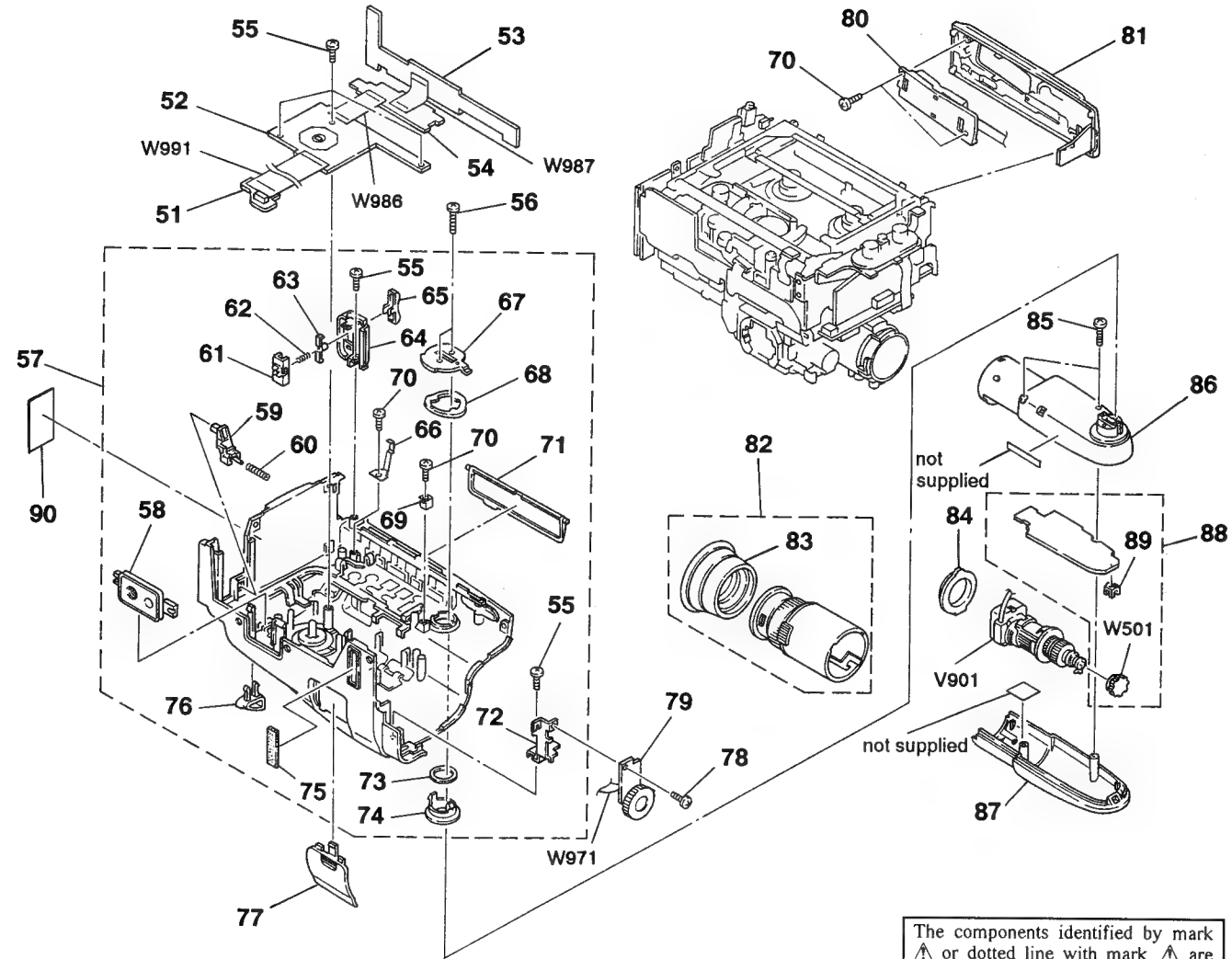
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.



5-1. CABINET (L) AND F PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY		* 12	3-703-713-41	STICKER, SONY SYMBOL (10)	
2	3-736-807-01	BELT, GRIP		13	3-713-790-21	SCREW (M2X6), TAPPING, P3	
3	3-578-221-00	SPRING, COMPRESSION		14	1-696-487-11	CABLE, FLAT (FFC-90)	
4	3-942-985-01	KNOB, STAND-BY		15	A-7063-322-A	MA-149P BOARD, COMPLETE	
5	3-736-364-01	SPRING		16	3-719-601-01	SCREW (B2X5), TAPPING	
6	4-602-490-00	SPRING, TENSION		* 17	3-949-000-01	RETAINER, MICROPHONE	
7	3-942-895-01	STOPPER, BELT		18	A-7091-800-A	MICROPHONE UNIT	
8	3-943-154-11	HOLDER (B), REMOTE CONTROL		19	X-3941-891-2	PANEL ASSY, F	
* 9	3-949-861-01	LABEL, MODEL NUMBER (AEP)		20	3-947-357-01	SPRING, TORSION	
* 9	3-950-354-01	LABEL, MODEL NUMBER (UK, E, Australian)		21	3-945-269-01	KNOB, S	
10	3-719-381-01	SCREW (M2X4)		22	1-465-927-81	REMOTE COMMANDER (CAM CORDER) (RMT-507)	
11	X-3942-139-1	LID ASSY, CASSETTE		23	3-708-412-01	LID, REMOTE COMMANDER	

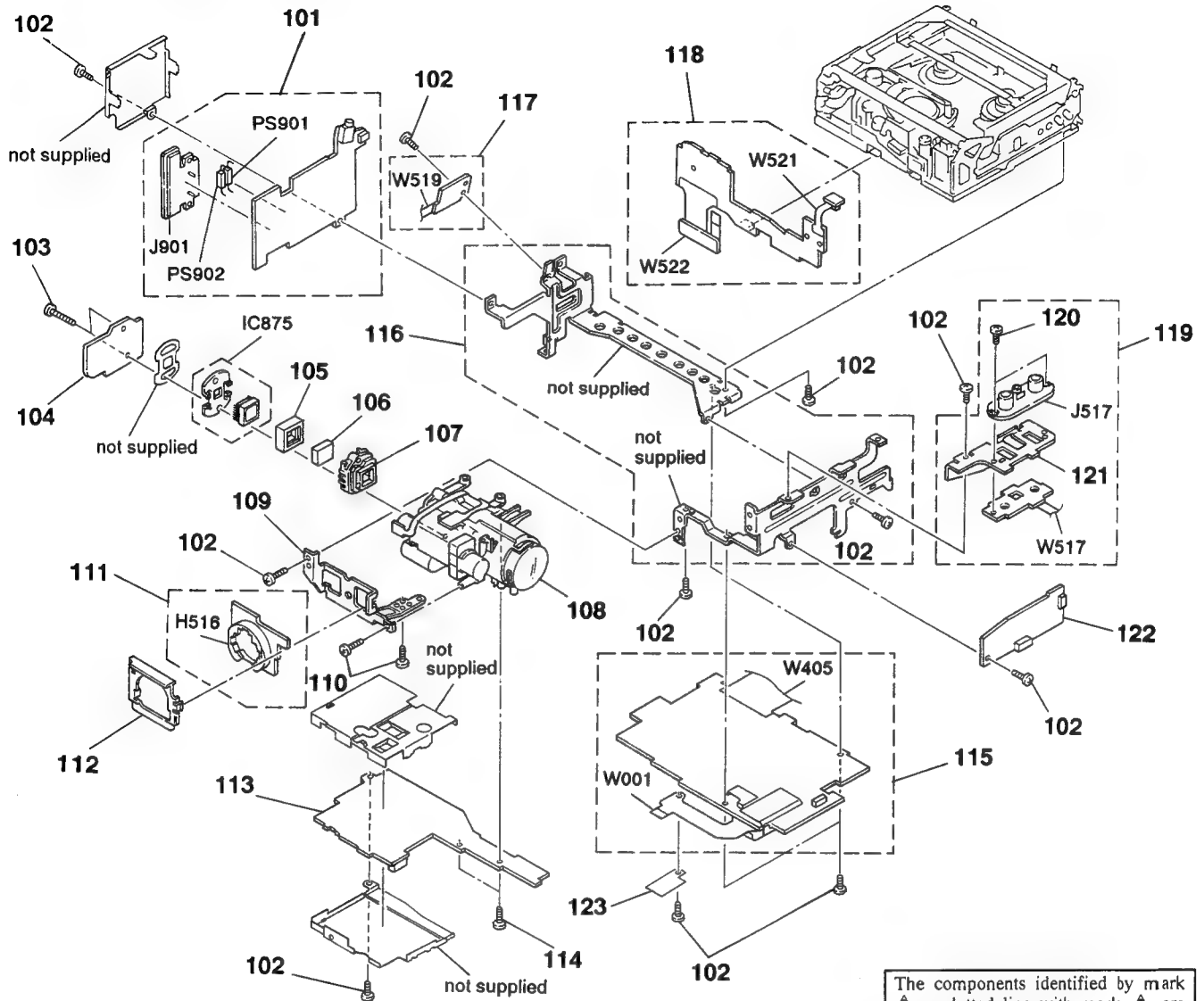
5-2. CABINET (R) AND EVF ASSEMBLIES



The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	A-7071-694-A	CN-65P BOARD, COMPLETE		75	3-949-008-01	SHEET, FOOT	
52	A-7071-655-A	CF-32 BOARD, COMPLETE		76	3-948-989-01	KNOB, BATTERY	
53	A-7071-653-A	VK-27 BOARD, COMPLETE		77	3-948-843-01	LID, BATTERY CASE, LITHIUM	
54	A-7071-654-A	ED-35 BOARD, COMPLETE		78	3-713-786-51	SCREW (M2X3)	
55	3-713-790-21	SCREW (M2X6), TAPPING, P3		79	A-7071-656-A	MF-191 BOARD, COMPLETE	
56	3-740-546-41	SCREW (M2X10)		80	1-692-257-11	SWITCH, PUSH (ZOOM)	
57	X-3942-156-3	CABINET (R) ASSY		81	X-3941-894-1	LID ASSY, LS	
58	3-942-911-01	SCREW, TRIPOD		82	X-3941-603-1	HOLDER ASSY, FINDER	
59	3-948-990-01	LOCK, BATTERY		83	3-946-426-01	EYE CUP	
60	3-426-508-00	SPRING, COMPRESSION		84	3-747-116-01	COVER, CRT	
61	3-948-839-01	BLIND, POWER		85	3-713-790-31	SCREW (M2X8), TAPPING, P3	
62	3-303-973-00	SPRING, COMPRESSION		86	X-3940-706-1	CABINET (L) ASSY, EVF	
63	3-946-186-01	PUSH BUTTON, POWER		87	3-943-077-01	CABINET (R), EVF	
64	3-948-975-01	POWER (BASE)		88	A-7063-220-A	VF-42P BOARD, COMPLETE	
65	3-946-248-01	BUTTON, POWER		89	3-942-888-01	HOLDER, LED	
66	3-948-988-01	SPRING, LEAF, VK		* 90	3-704-235-01	LABEL, CAUTION (UK)	
67	3-747-111-01	PLATE, LOCK, TILT		V901	1-452-565-11	CRT ASSY	
68	3-747-110-01	SPRING, LEAF, TILT		W501	1-540-019-21	SOCKET ASSY, CRT	
69	3-747-178-01	REINFORCEMENT, TILT LOCK		W971	1-696-484-11	CABLE, FLAT (FFC-87)	
70	3-719-601-01	SCREW (B2X5), TAPPING		W986	1-696-621-11	FP-590 FLEXIBLE BOARD	
71	3-948-976-01	DOOR, CONTROL		W987	1-696-622-11	FP-591 FLEXIBLE BOARD	
* 72	3-948-987-01	FRAME, MF		W991	1-696-483-11	CABLE, FLAT (FFC-86)	
73	3-747-112-01	RING, TILT					
74	3-747-109-01	SLEEVE, EVF					

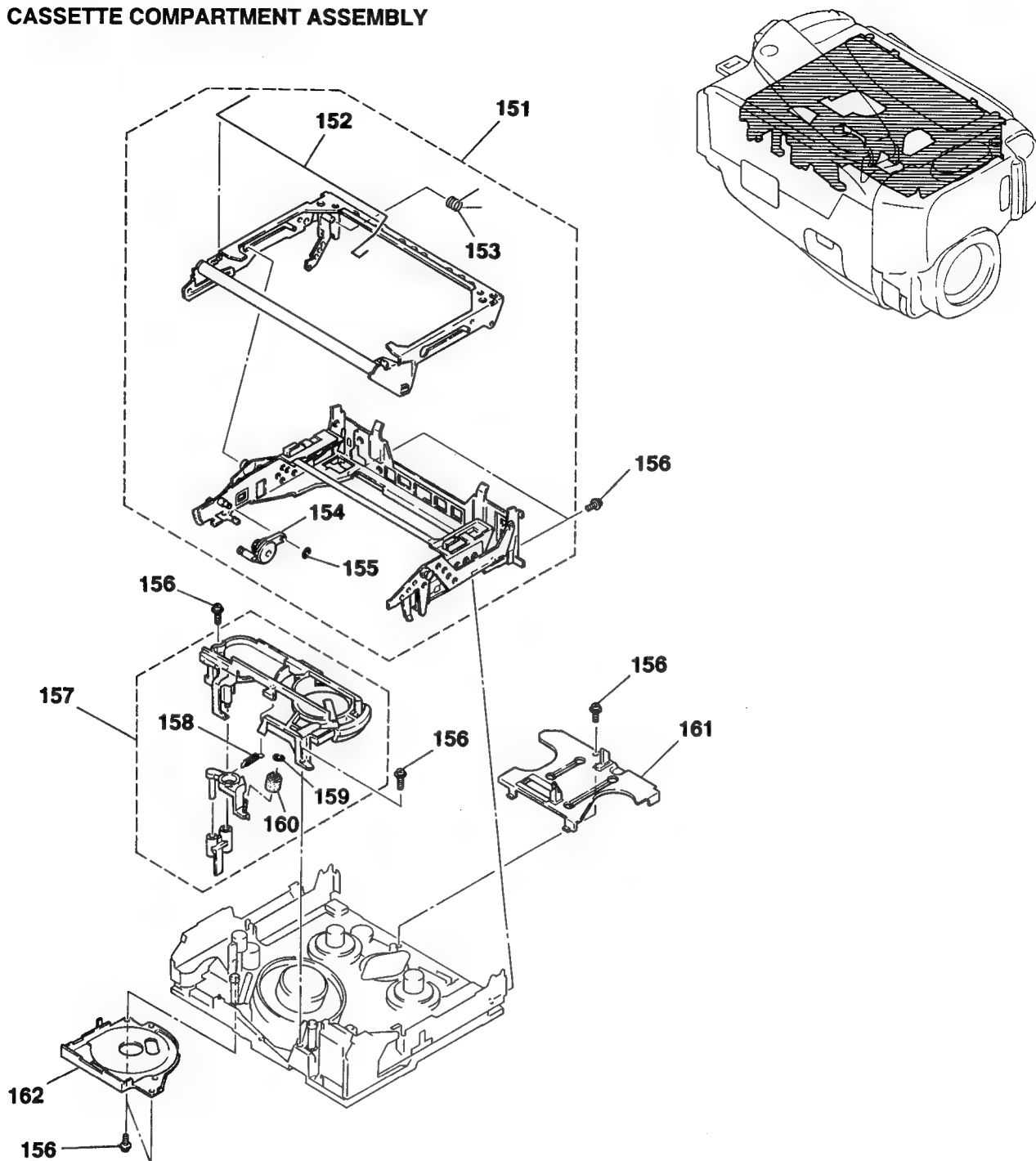
5-3. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description
△101	A-7063-320-A	DD-48P BOARD, COMPLETE
102	3-713-786-51	SCREW (M2X3)
103	3-947-268-01	SCREW (B TIGHT) (2), TAPPING
104	A-7063-318-A	CD-92P BOARD, COMPLETE
105	3-946-857-01	RUBBER (S), SEAL
106	1-547-558-21	FILTER BLOCK, OPTICAL
107	3-946-856-01	ADAPTOR (H), CCD FITTING
108	1-547-548-11	LENS, ZOOM (VCL-6210WC)
* 109	3-949-001-01	FRAME, LENS
110	3-713-790-21	SCREW (M2X6), TAPPING, P3
111	A-7071-652-A	LI-44 BOARD, COMPLETE
112	3-948-842-01	HOLDER, LI
113	A-7063-317-A	VC-122P BOARD, COMPLETE
114	3-719-601-01	SCREW (B2X5), TAPPING
115	A-7063-316-A	VS-95P BOARD, COMPLETE
* 116	X-3942-209-1	FRAME (UPPER LOWER) ASSY
117	A-7071-651-A	SW-205 BOARD, COMPLETE
118	A-7063-319-A	SL-27P BOARD, COMPLETE

Ref. No.	Part No.	Description	Remark
119	A-7063-266-A	JK-91 BOARD, COMPLETE	
120	3-719-381-01	SCREW (M2X4)	
* 121	3-948-974-01	FRAME (M), JACK	
122	A-7063-321-A	AU-138P BOARD, COMPLETE	
123	3-951-136-02	SHIELD, DRUM	
H516	1-550-104-32	HOLDER, BATTERY	
J517	1-537-142-21	TERMINAL BOARD	
J901	1-537-281-41	TERMINAL BOARD	
IC875	A-7030-369-A	CCD BLOCK ASSY (AUTO) (ICX055AK-2) (CCD IMAGER)	
△PS901	1-532-841-21	LINK, IC 1.6A/90V	
△PS902	1-532-841-21	LINK, IC 1.6A/90V	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
W517	1-696-482-11	CABLE, FLAT (FFC-85)	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	

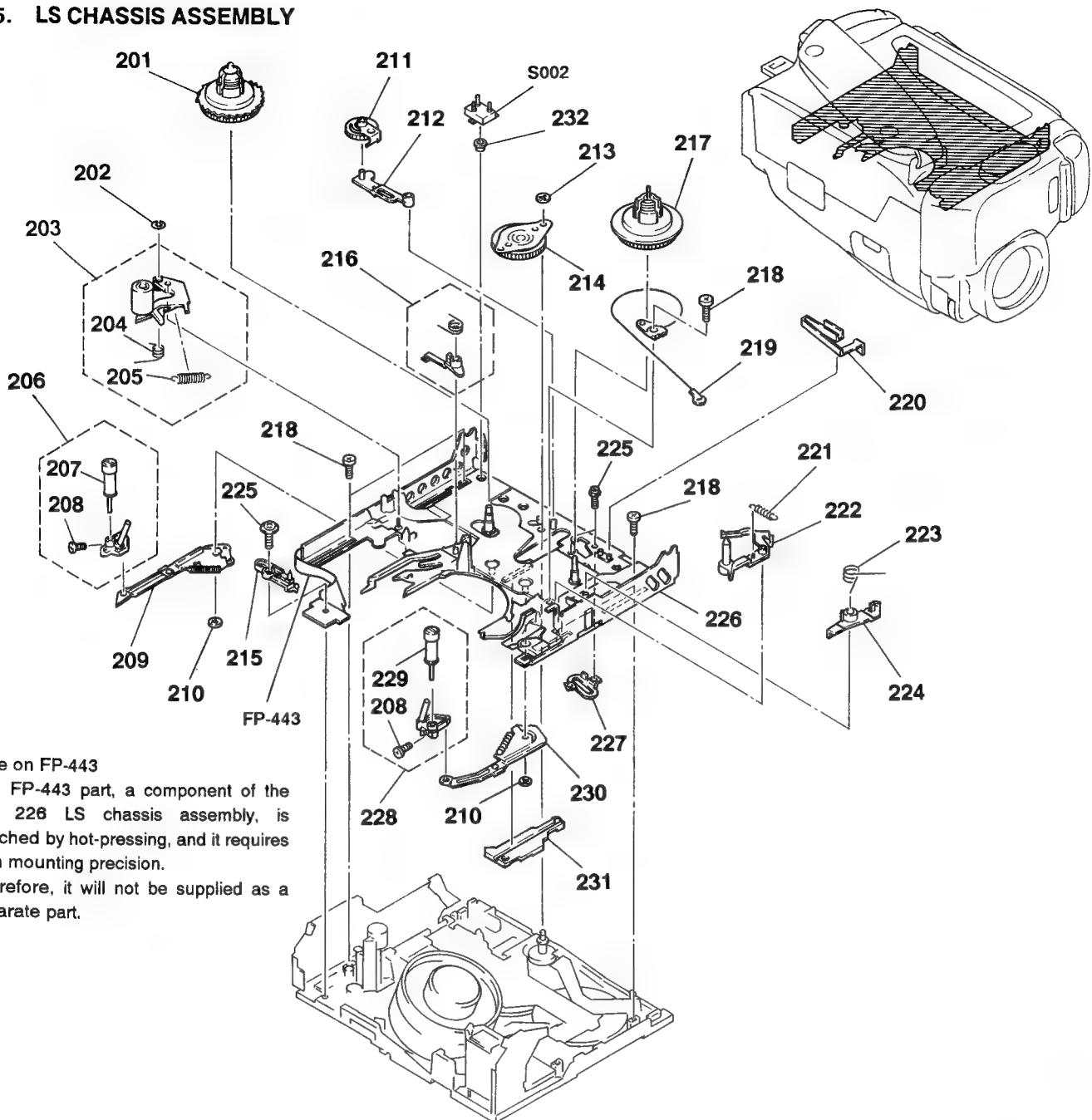
5-4. CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description
151	A-7040-312-A	CASSETTE COMPARTMENT BLOCK ASSY
152	3-945-773-01	BAR, TORSION
153	3-945-771-01	SPRING, TORSION
154	X-3941-287-2	DAMPER ASSY
155	3-315-384-31	WASHER, STOPPER
156	3-947-503-01	SCREW (M1. 4X2. 5)

Ref. No.	Part No.	Description
157	A-7040-309-A	PROTECT (BASE) BLOCK ASSY
158	3-945-760-01	SPRING, TENSION
159	3-321-393-01	WASHER, STOPPER
160	X-3726-817-3	ROLLER ASSY, HC
161	X-3941-280-1	RETAINER ASSY, GOOSENECK
162	3-945-733-01	COVER, CAPSTAN

5-5. LS CHASSIS ASSEMBLY



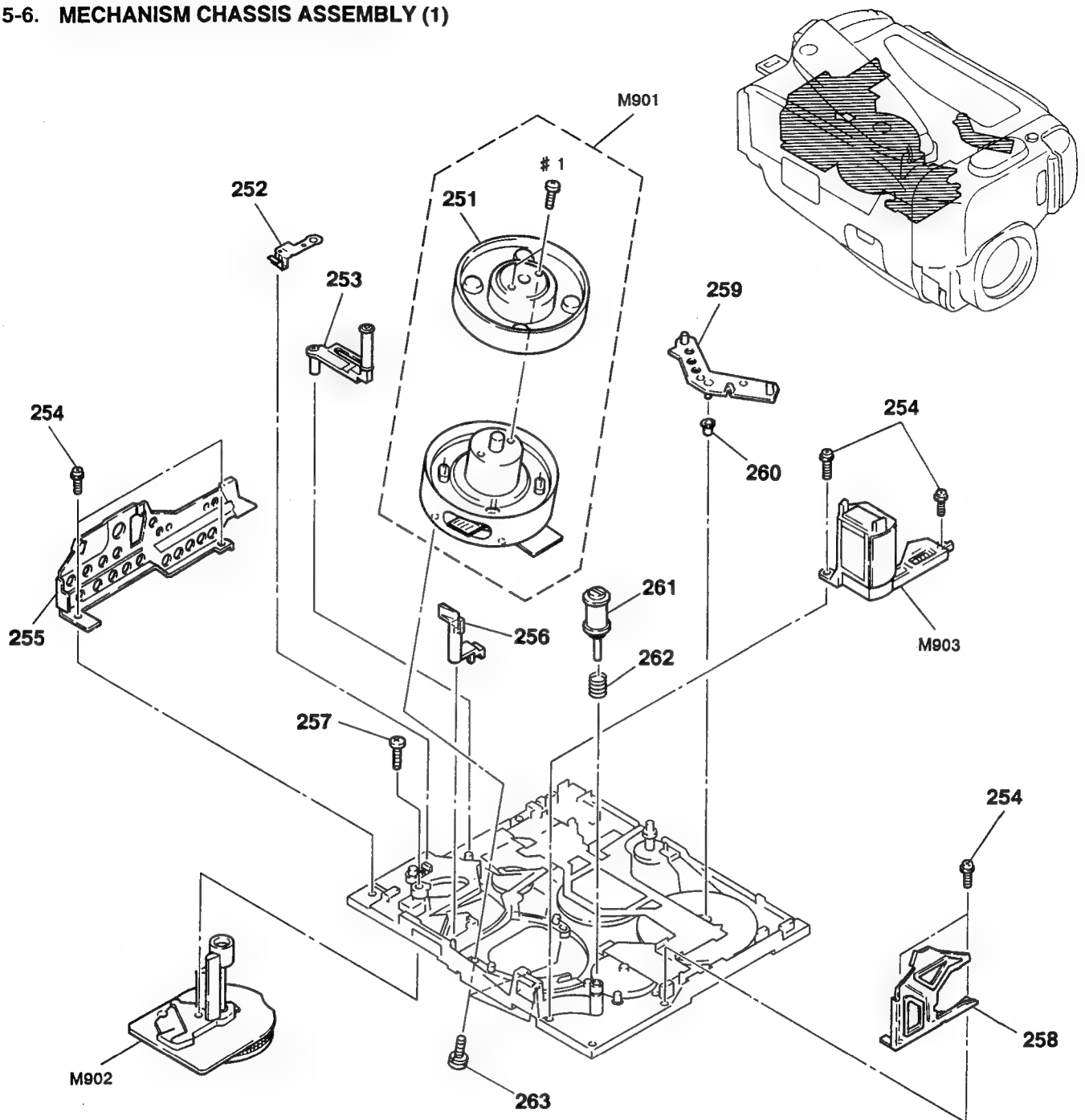
Note on FP-443

The FP-443 part, a component of the No. 226 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.

Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	X-3941-274-1	TABLE ASSY, REEL, T		218	3-945-756-01	SCREW (M1.4X3)	
202	3-331-007-21	WASHER		219	X-3941-277-1	STRING BLOCK ASSY	
203	X-3941-271-1	ARM ASSY, PINCH		220	3-945-801-01	BRAKE, S SOFT	
204	3-945-743-01	SPRING, TORSION					
205	3-945-783-01	SPRING, TENSION		221	3-948-810-01	SPRING, TENSION	
206	A-7040-307-A	GUIDE (BASE) (T) BLOCK ASSY		222	X-3941-276-1	TG1 ASSY	
207	X-3941-424-1	ROLLER ASSY, TG6		223	3-945-752-01	SPRING, TORSION	
208	3-947-504-01	SCREW (M1.2X2)		224	3-945-799-01	BRAKE, S HARD	
209	X-3941-267-1	ARM (T) ASSY, GUIDE		225	3-947-503-01	SCREW (M1.4X2.5)	
210	3-669-465-00	WASHER (1.5), STOPPER		226	X-3941-265-1	CHASSIS ASSY, LS	
211	X-3941-273-1	SOFT ASSY, T		227	3-945-784-01	PLATE, CAM, LS	
212	3-945-753-01	ARM, T SOFT		228	A-7040-306-A	GUIDE (BASE) (S) BLOCK ASSY	
213	3-726-829-01	WASHER, STOPPER		229	X-3941-269-1	ROLLER ASSY, TG3	
214	X-3941-279-1	GEAR ASSY, GOOSENECK		230	X-3941-266-1	ARM (S) ASSY, GUIDE	
215	3-947-644-01	RETAINER, TG5 (BASE)		231	3-945-837-01	SLIDER, GL	
216	A-7040-321-A	CLAW BLOCK ASSY, T HARD		232	3-949-881-01	SLEEVE	
217	X-3941-275-1	TABLE ASSY, REEL, S		S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	

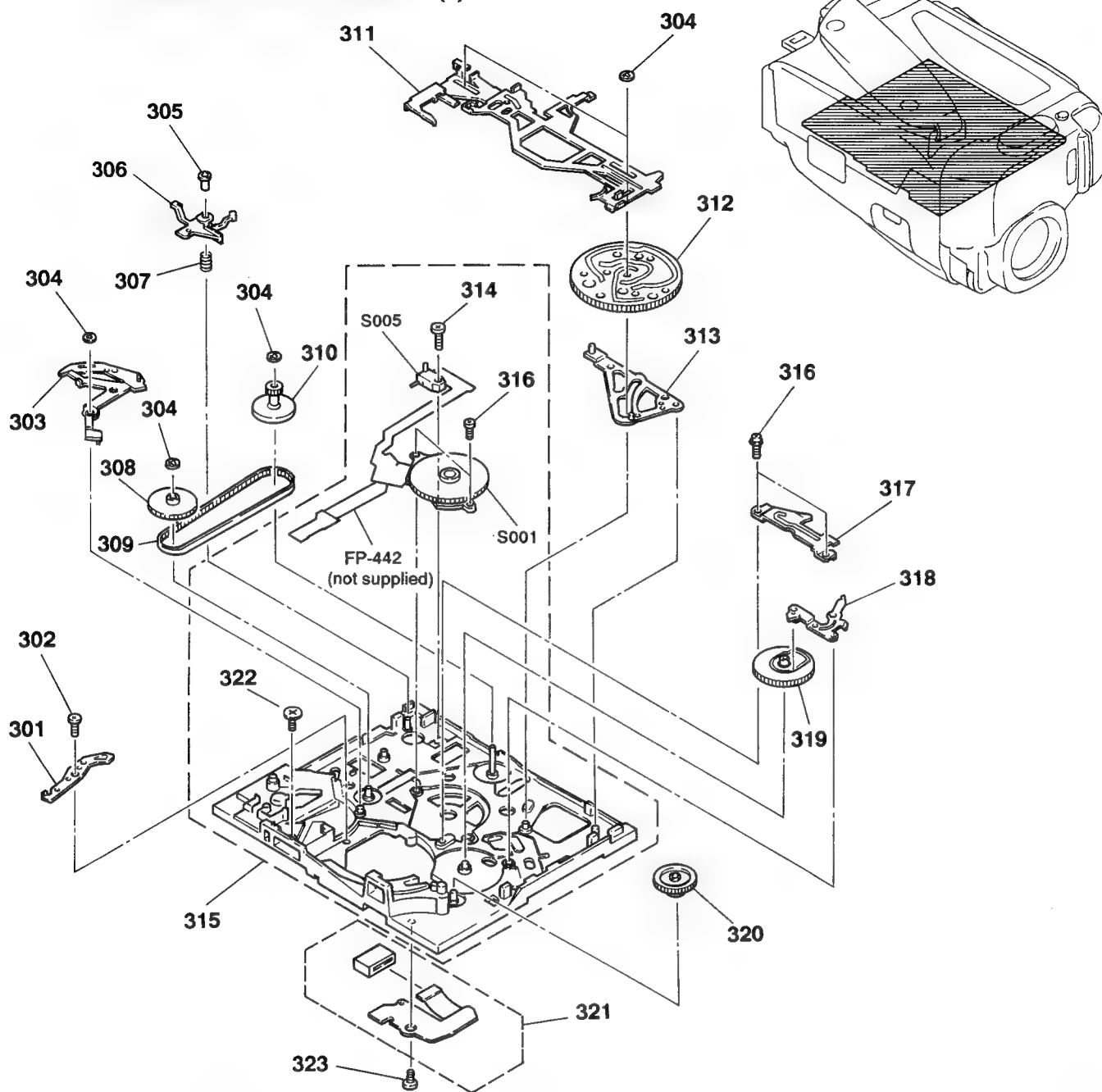
5-6. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description
251	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R)
252	3-945-822-01	SPRING, LEAF, TG7 ARM
253	A-7040-305-A	ARM BLOCK ASSY, TG7
254	3-947-503-01	SCREW (M1.4X2.5)
255	X-3941-255-1	PLATE (T) ASSY, SIDE
256	3-945-735-01	ARM, HC CONVERSION
257	3-713-786-71	SCREW (M2X5)
258	3-945-691-01	PLATE (S), SIDE
259	3-945-701-01	ARM, LS

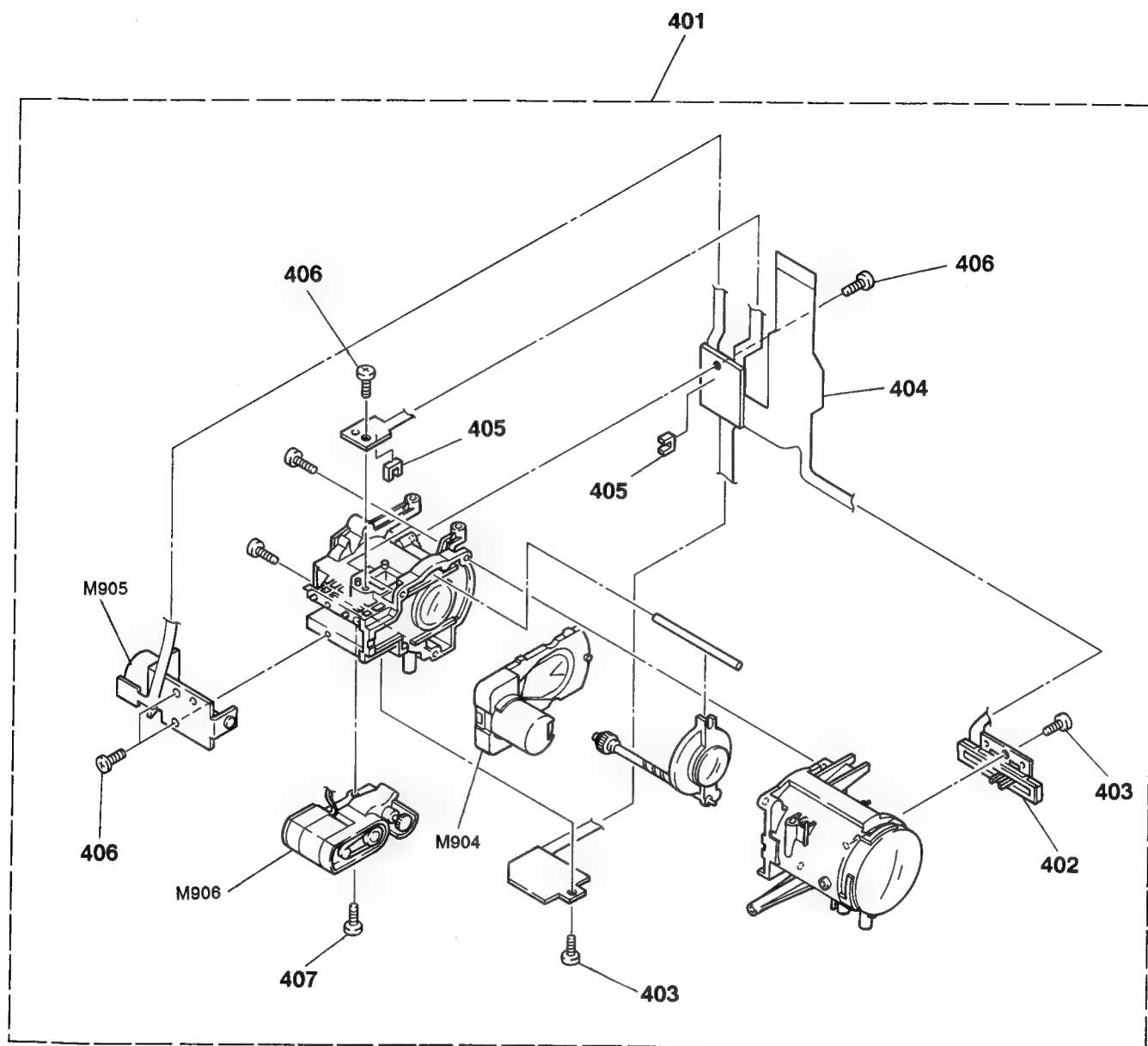
Ref. No.	Part No.	Description
260	3-945-702-01	ROLLER, LS
261	X-3941-262-1	ROLLER ASSY, TG2
262	3-945-774-01	SPRING, COMPRESSION
263	3-686-493-01	SCREW (M2X5), P1
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)

5-7. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
301	3-945-734-01	ARM, HC DRIVING		314	3-713-786-71	SCREW (M2X5)	
302	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD		315	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
303	X-3941-259-1	ARM ASSY, PINCH PRESS		316	3-947-503-01	SCREW (M1.4X2.5)	
304	3-726-829-01	WASHER, STOPPER		317	3-945-722-01	RETAINER, GEAR	
305	3-945-730-01	SLEEVE, EJECT		318	X-3941-257-1	ARM ASSY, FF	
306	3-945-706-01	LEVER, EJECT		319	3-945-697-01	GEAR (B), L	
307	3-945-729-01	SPRING, COMPRESSION		320	3-945-700-01	GEAR (A), L	
308	X-3941-256-1	GEAR ASSY, CHANGE		321	A-7040-311-A	FP-444 ASSY	
309	3-944-539-01	BELT, RELAY		322	3-946-848-01	SCREW, TG6 ADJUSTMENT	
310	3-945-695-01	PULLEY, RELAY		323	3-945-756-01	SCREW (M1.4X3)	
311	X-3941-260-1	SLIDER ASSY, M		S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
312	3-945-696-01	CAM		S005	1-570-771-21	SWITCH (C DOWN)	
313	X-3941-258-1	ARM ASSY, GL					

5-8. ZOOM LENS ASSEMBLY (VCL-6210WC)



Ref. No.	Part No.	Description
401	1-547-548-11	LENS, ZOOM (VCL-6210WC)
402	3-708-446-01	METER, POTENTIAL
403	3-708-053-01	SCREW, FB FITTING
404	3-708-493-01	FLEXIBLE
405	3-708-435-01	PHOTO INTERRUPTER

Ref. No.	Part No.	Description
406	3-707-946-01	SCREW
407	3-708-450-01	SCREW, PZ
M904	3-708-494-01	METER ASSY, IG (IRIS)
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)

SECTION 6 ELECTRICAL PARTS LIST

AU-138

CD-92

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-7063-321-A	AU-138 BOARD, COMPLETE ***** (Ref. No 2,000 Series)				(COIL)	
		(CAPACITOR)		L601	1-410-384-31	INDUCTOR CHIP 18uH	
C601	1-126-607-11	ELECT CHIP 47uF 20% 4V				(RESISTOR)	
C605	1-124-778-00	ELECT CHIP 22uF 20% 6.3V		R603	1-216-851-11	METAL CHIP 330K 5% 1/16W	
C607	1-164-222-11	CERAMIC CHIP 0.22uF 25V		R604	1-216-837-11	METAL CHIP 22K 5% 1/16W	
C614	1-164-156-11	CERAMIC CHIP 0.1uF 25V		R605	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C615	1-164-373-11	CERAMIC CHIP 0.033uF 25V		R607	1-216-859-11	METAL CHIP 1.5M 5% 1/16W	
				R614	1-216-817-11	METAL CHIP 470 5% 1/16W	
C617	1-162-974-11	CERAMIC CHIP 0.01uF 50V		R615	1-216-839-11	METAL CHIP 33K 5% 1/16W	
C618	1-162-957-11	CERAMIC CHIP 220PF 5% 50V		R616	1-216-864-11	METAL CHIP 0 5% 1/16W	
C627	1-162-974-11	CERAMIC CHIP 0.01uF 50V		R617	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
C628	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V		R618	1-216-839-11	METAL CHIP 33K 5% 1/16W	
C629	1-126-607-11	ELECT CHIP 47uF 20% 4V		R619	1-216-864-11	METAL CHIP 0 5% 1/16W	
C630	1-124-778-00	ELECT CHIP 22uF 20% 6.3V		R620	1-216-840-11	METAL CHIP 39K 5% 1/16W	
C631	1-128-006-11	ELECT CHIP 4.7uF 20% 25V		R622	1-216-839-11	METAL CHIP 33K 5% 1/16W	
C632	1-162-951-11	CERAMIC CHIP 68PF 5% 50V		R625	1-216-833-11	METAL CHIP 10K 5% 1/16W	
C636	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V		R630	1-216-821-11	METAL CHIP 1K 5% 1/16W	
C637	1-162-974-11	CERAMIC CHIP 0.01uF 50V		R632	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
C639	1-162-974-11	CERAMIC CHIP 0.01uF 50V		R633	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
C640	1-164-005-11	CERAMIC CHIP 0.47uF 25V		R634	1-216-837-11	METAL CHIP 22K 5% 1/16W	
C641	1-162-949-11	CERAMIC CHIP 47PF 5% 50V		R637	1-216-864-11	METAL CHIP 0 5% 1/16W	
C643	1-162-951-11	CERAMIC CHIP 220PF 5% 50V		R677	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
C645	1-128-006-11	ELECT CHIP 4.7uF 20% 25V		R679	1-216-821-11	METAL CHIP 1K 5% 1/16W	
C647	1-128-013-11	ELECT CHIP 1uF 20% 50V		R681	1-216-851-11	METAL CHIP 330K 5% 1/16W	
C649	1-128-004-11	ELECT CHIP 10uF 20% 16V		R682	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C651	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V				*****	
C654	1-162-977-11	CERAMIC CHIP 0.0018uF 10% 50V		*	A-7063-318-A	CD-92 BOARD, COMPLETE ***** (Ref. No 1,000 Series)	
C655	1-126-205-11	ELECT CHIP 47uF 20% 6.3V				(CAPACITOR)	
C657	1-164-005-11	CERAMIC CHIP 0.47uF 25V		C875	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C660	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V		C876	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C691	1-128-006-11	ELECT CHIP 4.7uF 20% 25V		C877	1-128-008-11	ELECT CHIP 3.3uF 20% 35V	
C695	1-128-006-11	ELECT CHIP 4.7uF 20% 25V		C879	1-162-637-11	CERAMIC CHIP 0.47uF 16V	
C699	1-124-778-00	ELECT CHIP 22uF 20% 6.3V		C880	1-135-091-00	TANTALUM CHIP 1uF 20% 16V	
		(CONNECTOR)		C881	1-128-004-11	ELECT CHIP 10uF 20% 16V	
CN601	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P		C882	1-126-607-11	ELECT CHIP 47uF 20% 4V	
CN602	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P		C884	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
CN603	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P		C888	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
		(IC)					
IC601	8-759-823-19	IC CXA1488R					
IC602	8-749-923-29	IC RS-20E-T					

CD-92**CF-32****CN-65****DD-48**

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN875	1-573-308-11	CONNECTOR, BOARD TO BOARD 16P	
		< DIODE >	
D875	8-719-800-76	DIODE 1SS123	
D876	8-719-404-46	DIODE MA110	
D877	8-719-820-05	DIODE 1SS181	
D878	8-719-404-46	DIODE MA110	
		< COIL >	
L875	1-412-064-11	INDUCTOR CHIP 100uH	
		< TRANSISTOR >	
Q875	8-729-425-64	TRANSISTOR 2SD2216Q	
Q876	8-729-427-72	TRANSISTOR XP4501	
Q877	8-729-232-86	TRANSISTOR 2SK1875	
		< RESISTOR >	
R877	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R878	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R879	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R880	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R881	1-216-819-11	METAL CHIP 680 5% 1/16W	
R882	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R883	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R884	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R885	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R887	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	

*	A-7071-655-A	CF-32 BOARD, COMPLETE ***** (Ref. No 7,000 Series)	
		< CONNECTOR >	
CN993	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
		< DIODE >	
D992	8-719-404-46	DIODE MA110	
		< RESISTOR >	
R991	1-216-295-00	METAL CHIP 0 5% 1/10W	
R992	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< SWITCH >	
S991	1-692-111-11	SWITCH, KEY BOARD (FADER)	
S993	1-692-111-11	SWITCH, KEY BOARD (DATE)	
S995	1-692-111-11	SWITCH, KEY BOARD (COUNTER RESET)	
S996	1-692-111-11	SWITCH, KEY BOARD (TIME)	



Ref. No.	Part No.	Description	Remark
S997	1-692-024-21	SWITCH, ROTARY (PROGRAM AE)	
		< BUZZER >	
SP991	1-529-107-11	BUZZER, PIEZOELECTRIC	

*	A-7071-694-A	CN-65 BOARD, COMPLETE ***** (Ref. No 6,000 Series)	
		< CONNECTOR >	
CN518	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
		< CABLE, FLAT >	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

*△	A-7063-320-A	DD-48 BOARD, COMPLETE ***** (Ref. No 1,000 Series)	
		< CAPACITOR >	
C901	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C902	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C904	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C906	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C907	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C909	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C910	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C911	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C912	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C914	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C915	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C916	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C917	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C919	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C920	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C921	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C922	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C923	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C924	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C925	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C926	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C927	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C928	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C929	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C931	1-165-178-11	CERAMIC CHIP 6.8uF 16V	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C932	1-165-178-11	CERAMIC CHIP 6.8uF	16V	< TRANSISTOR >			
C933	1-128-530-11	ELECT CHIP 33uF	20% 10V	Q901	8-729-403-27	TRANSISTOR XN4401	
C934	1-128-530-11	ELECT CHIP 33uF	20% 10V	Q902	8-729-402-42	TRANSISTOR UN5213	
C935	1-135-177-21	TANTALUM CHIP 1uF	20% 20V	Q903	8-729-823-84	TRANSISTOR FP102	
C936	1-135-177-21	TANTALUM CHIP 1uF	20% 20V	Q904	8-729-804-41	TRANSISTOR 2SB1122-S	
C938	1-164-505-11	CERAMIC CHIP 2.2uF	16V	Q905	8-729-823-82	TRANSISTOR FP101	
C939	1-164-505-11	CERAMIC CHIP 2.2uF	16V	Q906	8-729-823-82	TRANSISTOR FP101	
C940	1-128-004-11	ELECT CHIP 10uF	20% 16V	Q907	8-729-402-81	TRANSISTOR XN4501	
C942	1-135-177-21	TANTALUM CHIP 1uF	20% 20V	Q908	8-729-805-25	TRANSISTOR 2SB1121	
C943	1-135-177-21	TANTALUM CHIP 1uF	20% 20V	Q909	8-729-805-25	TRANSISTOR 2SB1121	
C946	1-128-004-11	ELECT CHIP 10uF	20% 16V	Q910	8-729-014-20	TRANSISTOR RN2304	
C947	1-128-004-11	ELECT CHIP 10uF	20% 16V	< RESISTOR >			
C948	1-128-004-11	ELECT CHIP 10uF	20% 16V	R901	1-216-837-11	METAL CHIP 22K 5% 1/16W	
C949	1-128-004-11	ELECT CHIP 10uF	20% 16V	R902	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
C950	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	R903	1-216-837-11	METAL CHIP 22K 5% 1/16W	
< CONNECTOR >				R904	1-218-698-11	METAL CHIP 1.8K 0.50% 1/16W	
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P		R905	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
CN902	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P		R906	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
< DIODE >				R907	1-216-818-11	METAL CHIP 560 5% 1/16W	
D901	8-719-981-59	DIODE FC805		R908	1-216-847-11	METAL CHIP 150K 5% 1/16W	
D905	8-719-404-46	DIODE MA110		R909	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
D906	8-719-404-46	DIODE MA110		R910	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
< IC >				R911	1-216-838-11	METAL CHIP 27K 5% 1/16W	
IC901	8-759-060-94	IC MB3785APFV-G-BND-ER		R912	1-216-840-11	METAL CHIP 39K 5% 1/16W	
< JACK >				R913	1-216-296-00	METAL CHIP 0 5% 1/8W	
J901	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)		R914	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
J902	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)		R915	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
< COIL >				R916	1-216-833-11	METAL CHIP 10K 5% 1/16W	
L903	1-424-522-21	COIL, CHOKE 10uH		R917	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
L904	1-424-522-21	COIL, CHOKE 10uH		R918	1-216-811-11	METAL CHIP 150 5% 1/16W	
L905	1-424-522-21	COIL, CHOKE 10uH		R919	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
L906	1-424-523-21	COIL, CHOKE 22uH		R920	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
L909	1-412-028-11	INDUCTOR CHIP 4.7uH		R921	1-216-841-11	METAL CHIP 47K 5% 1/16W	
L910	1-412-028-11	INDUCTOR CHIP 4.7uH		R922	1-216-833-11	METAL CHIP 10K 5% 1/16W	
L911	1-412-028-11	INDUCTOR CHIP 4.7uH		R923	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
L912	1-424-524-21	COIL, CHOKE 47uH		R924	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
L913	1-424-524-21	COIL, CHOKE 47uH		R925	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
L914	1-412-034-11	INDUCTOR CHIP 330uH		R926	1-216-833-11	METAL CHIP 10K 5% 1/16W	
L915	1-412-034-11	INDUCTOR CHIP 330uH		R927	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
L916	1-412-028-11	INDUCTOR CHIP 4.7uH		R928	1-216-843-11	METAL CHIP 68K 5% 1/16W	
< LINK, IC >				R929	1-216-841-11	METAL CHIP 47K 5% 1/16W	
△PS901	1-532-841-21	LINK, IC (PRF1600 1.6A)		R930	1-216-182-00	METAL CHIP 220 5% 1/8W	
△PS902	1-532-841-21	LINK, IC (PRF1600 1.6A)		R931	1-216-182-00	METAL CHIP 220 5% 1/8W	
				R932	1-216-182-00	METAL CHIP 220 5% 1/8W	
				R933	1-216-194-00	METAL CHIP 680 5% 1/8W	
				R935	1-216-864-11	METAL CHIP 0 5% 1/16W	
				R936	1-216-845-11	METAL CHIP 100K 5% 1/16W	
				R937	1-216-864-11	METAL CHIP 0 5% 1/16W	
				R938	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

DD-48

ED-35

JK-91

LI-44

MA-149

Ref. No.	Part No.	Description	Remark
R939	1-218-883-11	METAL CHIP	33K 0.50% 1/16W
R940	1-216-836-11	METAL CHIP	18K 5% 1/16W
R941	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R942	1-216-833-11	METAL CHIP	10K 5% 1/16W
R943	1-216-296-00	METAL CHIP	0 5% 1/8W
R944	1-216-841-11	METAL CHIP	47K 5% 1/16W
R945	1-216-828-11	METAL CHIP	3.9K 5% 1/16W
R946	1-216-842-11	METAL CHIP	56K 5% 1/16W
R947	1-216-295-00	METAL CHIP	0 5% 1/10W
R949	1-216-296-00	METAL CHIP	0 5% 1/8W
R950	1-216-864-11	METAL CHIP	0 5% 1/16W
R951	1-216-296-00	METAL CHIP	0 5% 1/8W
R952	1-216-864-11	METAL CHIP	0 5% 1/16W
R953	1-216-864-11	METAL CHIP	0 5% 1/16W
		< SWITCH >	
S901	1-572-467-11	SWITCH, PUSH (1 KEY) (EJECT)	
		< TRANSFORMER >	
T901	1-450-874-21	TRANSFORMER, DC-DC CONVERTER	

*	A-7071-654-A	ED-35 BOARD, COMPLETE	

		(Ref. No 8,000 Series)	
		< DIODE >	
D986	8-719-404-46	DIODE MA110	
D987	8-719-404-40	DIODE MA121	
		< SWITCH >	
S986	1-571-275-31	SWITCH, SLIDE (BEEP)	
S987	1-692-111-11	SWITCH, KEY BOARD (SUMMER TIME)	
S988	1-571-275-31	SWITCH, SLIDE (REMOTE COMMANDER)	
S989	1-692-111-11	SWITCH, KEY BOARD (AREA)	
S990	1-571-275-31	SWITCH, SLIDE (EDIT)	
		< CABLE, FLAT >	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	

*	A-7063-266-A	JK-91 BOARD, COMPLETE	

		(Ref. No 3,000 Series)	
	3-719-381-01	SCREW (M2X4)	
*	3-948-974-01	FRAME (M), JACK	

Ref. No.	Part No.	Description	Remark
		< JACK >	
J517	1-537-142-21	TERMINAL BOARD	(VIDEO, AUDIO, RFU DC OUT)
		< CABLE, FLAT >	
W517	1-696-482-11	CABLE, FLAT (FFC-85)	

*	A-7071-652-A	LI-44 BOARD, COMPLETE	

		(Ref. No 4,000 Series)	
		< CONNECTOR >	
* CN516	1-580-055-21	PIN, CONNECTOR 2P	
		< HOLDER, BATTERY >	
H516	1-550-104-32	HOLDER, BATTERY	

*	A-7063-322-A	MA-149 BOARD, COMPLETE	

		(Ref. No 2,000 Series)	
		< CAPACITOR >	
C551	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C552	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C553	1-162-960-11	CERAMIC CHIP	220PF 10% 50V
C554	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C555	1-162-587-11	CERAMIC CHIP	0.039uF 10% 25V
C556	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V
C557	1-162-953-11	CERAMIC CHIP	100PF 5% 50V
C558	1-162-638-11	CERAMIC CHIP	1uF 16V
C562	1-162-638-11	CERAMIC CHIP	1uF 16V
C563	1-126-205-11	ELECT CHIP	47uF 20% 6.3V
C566	1-162-638-11	CERAMIC CHIP	1uF 16V
C569	1-164-492-11	CERAMIC CHIP	0.15uF 10% 16V
		< CONNECTOR >	
CN551	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN552	1-580-056-21	PIN, CONNECTOR 3P	
		< DIODE >	
D552	8-719-404-46	DIODE MA110	
		< IC >	
IC551	8-759-822-37	IC LA7293M	

MA-149

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SL-27

SW-205

Ref. No.	Part No.	Description	Remark
		< JACK >	
J551	1-568-027-11	JACK, SMALL TYPE 1P (MIC)	
		< TRANSISTOR >	
Q551	8-729-402-55	TRANSISTOR 2SB1218A-R	
		< RESISTOR >	
R551	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R552	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R553	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R554	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R555	1-216-864-11	METAL CHIP 0 5% 1/16W	
R556	1-216-864-11	METAL CHIP 0 5% 1/16W	
R558	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R564	1-216-295-00	METAL CHIP 0 5% 1/10W	
R565	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R566	1-216-864-11	METAL CHIP 0 5% 1/16W	
R571	1-216-296-00	METAL CHIP 0 5% 1/8W	
R572	1-216-296-00	METAL CHIP 0 5% 1/8W	

*	A-7071-656-A	MF-191 BOARD, COMPLETE	

		(Ref. No 5,000 Series)	
		< DIODE >	
D971	8-719-404-46	DIODE MA110	
		< RESISTOR >	
R971	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< SWITCH >	
S971	1-692-088-41	SWITHC, TACTILE (FOCUS)	
S972	1-241-865-11	RES, VAR, CARBON 10K (FOCUS RING)	
S973	1-572-467-11	SWITCH, PUSH (1 KEY) (LENS OPEN/CLOSE)	
		< CABLE, FLAT >	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	

*	A-7063-319-A	SL-27 BOARD, COMPLETE	

		(Ref. No 5,000 Series)	
		< CAPACITOR >	
C521	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C522	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C524	1-128-013-11	ELECT CHIP 1uF 20% 50V	

Ref. No.	Part No.	Description	Remark
C525	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C526	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C527	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
		< CONNECTOR >	
CN521	1-691-482-21	CONNECTOR, FFC/FPC 15P	
CN522	1-691-472-21	CONNECTOR, FFC/FPC 6P	
CN523	1-691-473-21	CONNECTOR, FFC/FPC 7P	
		< IC >	
IC521	8-759-059-09	IC LB8111V	
		< TRANSISTOR >	
Q521	8-729-402-81	TRANSISTOR XN4501	
		< RESISTOR >	
R522	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R523	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R524	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R525	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R528	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R530	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R532	1-216-174-00	METAL CHIP 100 5% 1/8W	
R533	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< NETWORK, RES >	
RB521	1-236-424-11	NETWORK, RES 10K	
RB522	1-236-424-11	NETWORK, RES 10K	
		< FLEXIBLE BOARD >	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-12	FP-589 FLEXIBLE BOARD	

*	A-7071-651-A	SW-205 BOARD, COMPLETE	

		(Ref. No 7,000 Series)	
		< SWITCH >	
S519	1-553-977-00	SWITCH, SLIDE (STBY)	
S520	1-571-315-11	SWITCH, KEY BOARD (START/STOP)	
		< CABLE, FLAT >	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-7063-317-A	VC-122 BOARD, COMPLETE ***** (Ref. No 3,000 Series)		C804	1-162-974-11	CERAMIC CHIP 0.01uF	50V
		< CAPACITOR >		C805	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C701	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V	C806	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C702	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C807	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C703	1-164-361-11	CERAMIC CHIP 0.047uF	16V	C808	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C705	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C809	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
C706	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C810	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C707	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C811	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C708	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C813	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C709	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C814	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C710	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C815	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
C711	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C816	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C712	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C817	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C713	1-162-947-11	CERAMIC CHIP 33PF	5% 50V	C818	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C714	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C819	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C716	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C820	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C717	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C821	1-162-947-11	CERAMIC CHIP 33PF	5% 50V
C718	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C823	1-135-091-00	TANTALUM CHIP 1uF	20% 16V
C719	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C824	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C721	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C826	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C722	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C827	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C723	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C830	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C724	1-164-634-11	CERAMIC CHIP 1uF	16V	C832	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C725	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C833	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C726	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C834	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C727	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C835	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C728	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C836	1-126-205-11	ELECT CHIP 47uF	20% 6.3V
C729	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C837	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C730	1-162-971-11	CERAMIC CHIP 0.001uF	50V	C838	1-135-145-11	TANTALUM CHIP 0.47uF	10% 35V
C731	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C839	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C733	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C841	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C734	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C851	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V
C735	1-162-971-11	CERAMIC CHIP 0.001uF	50V	C852	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C736	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C853	1-164-634-11	CERAMIC CHIP 1uF	16V
C737	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C854	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C738	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C855	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C739	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C856	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C741	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C857	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C742	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C858	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C745	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C859	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
C749	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C860	1-126-205-11	ELECT CHIP 47uF	20% 6.3V
C750	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C861	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C751	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C862	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C752	1-162-943-11	CERAMIC CHIP 15PF	5% 50V	C863	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C801	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C864	1-162-638-11	CERAMIC CHIP 1uF	16V
C802	1-162-920-11	CERAMIC CHIP 27PF	5% 50V	C866	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C803	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C868	1-164-360-11	CERAMIC CHIP 0.1uF	16V
				C869	1-164-173-11	CERAMIC CHIP 0.0039uF	10% 50V
				C870	1-164-005-11	CERAMIC CHIP 0.47uF	25V
				C871	1-164-634-11	CERAMIC CHIP 1uF	16V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< CONNECTOR >							
CN701	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P		L802	1-412-006-31	INDUCTOR CHIP 10uH	
CN801	1-573-336-11	CONNECTOR, BOARD TO BOARD 16P		L803	1-412-058-11	INDUCTOR CHIP 10uH	
CN851	1-573-361-11	CONNECTOR, FFC/FPC 21P		L804	1-412-058-11	INDUCTOR CHIP 10uH	
< TRIMMER >				L851	1-412-058-11	INDUCTOR CHIP 10uH	
CT801	1-141-356-11	CAP, ADJ 6P		L853	1-412-031-11	INDUCTOR CHIP 47uH	
< FILTER >				< TRANSISTOR >			
FL701	1-236-834-21	FILTER, LOW PASS		Q701	8-729-928-87	TRANSISTOR DTC124EE	
FL702	1-415-751-21	DELAY LINE, LC (YH)		Q702	8-729-427-74	TRANSISTOR XP4601	
< IC >				Q703	8-729-427-74	TRANSISTOR XP4601	
IC701	8-759-243-19	IC TC7SU04F		Q704	8-729-425-50	TRANSISTOR 2SB1462Q	
IC702	8-759-064-36	IC MB88346BPFV-EF		Q706	8-729-425-64	TRANSISTOR 2SD2216Q	
IC703	8-759-710-07	IC NJM2234M		Q707	8-729-428-84	TRANSISTOR UN9111	
IC704	8-752-348-92	IC CXD2101AR		Q708	8-729-425-64	TRANSISTOR 2SD2216Q	
IC705	8-759-063-18	IC CXD2103AR		Q709	8-729-427-72	TRANSISTOR XP4501	
IC706	8-752-355-56	IC CXD2104BN		Q801	8-729-425-64	TRANSISTOR 2SD2216Q	
IC707	8-752-347-93	IC CXD2100AQ		Q802	8-729-427-70	TRANSISTOR XP4401	
IC709	8-752-840-64	IC CXP80624-434R		Q851	8-729-425-64	TRANSISTOR 2SD2216Q	
IC712	8-759-073-67	IC BR9021AF		Q852	8-729-013-88	TRANSISTOR RN1302	
IC801	8-752-350-16	IC CXD1257AR		Q853	8-729-427-70	TRANSISTOR XP4401	
IC802	8-752-056-39	IC CXA1507BR		< RESISTOR >			
IC803	8-752-053-26	IC CXA1399Q		R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
IC804	8-752-327-48	IC CXD1250N		R702	1-216-821-11	METAL CHIP 1K 5% 1/16W	
IC805	8-752-054-61	IC CXA1390AR		R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
IC851	8-759-701-24	IC NJM3414M		R704	1-216-815-11	METAL CHIP 330 5% 1/16W	
IC852	8-759-998-96	IC LM324D		R705	1-216-833-11	METAL CHIP 10K 5% 1/16W	
IC853	8-759-058-47	IC MPC1724VMEL		R706	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
IC854	8-759-823-51	IC LB1830M		R707	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
IC856	8-759-998-98	IC LM358D		R708	1-216-845-11	METAL CHIP 100K 5% 1/16W	
< COIL >				R709	1-216-839-11	METAL CHIP 33K 5% 1/16W	
L701	1-412-006-31	INDUCTOR CHIP 10uH		R710	1-216-857-11	METAL CHIP 1M 5% 1/16W	
L703	1-412-052-21	INDUCTOR CHIP 1uH		R711	1-216-864-11	METAL CHIP 0 5% 1/16W	
L704	1-412-006-31	INDUCTOR CHIP 10uH		R712	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L705	1-412-979-21	INDUCTOR 1uH		R713	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L706	1-412-062-11	INDUCTOR CHIP 47uH		R714	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L708	1-412-979-21	INDUCTOR 1uH		R715	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L710	1-412-052-21	INDUCTOR CHIP 1uH		R716	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L711	1-412-058-11	INDUCTOR CHIP 10uH		R718	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L712	1-412-052-21	INDUCTOR CHIP 1uH		R719	1-216-840-11	METAL CHIP 39K 5% 1/16W	
L714	1-412-006-31	INDUCTOR CHIP 10uH		R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
L715	1-412-058-11	INDUCTOR CHIP 10uH		R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
L717	1-412-058-11	INDUCTOR CHIP 10uH		R723	1-216-833-11	METAL CHIP 10K 5% 1/16W	
L720	1-412-006-31	INDUCTOR CHIP 10uH		R724	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
L721	1-410-391-11	INDUCTOR CHIP 68uH		R725	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L801	1-412-029-11	INDUCTOR CHIP 10uH		R727	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
				R728	1-216-813-11	METAL CHIP 220 5% 1/16W	
				R729	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
				R730	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
				R731	1-216-295-00	METAL CHIP 0 5% 1/10W	
				R732	1-216-821-11	METAL CHIP 1K 5% 1/16W	

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Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R733	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R803	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R734	1-216-817-11	METAL CHIP	470	5%	1/16W	R804	1-216-833-11	METAL CHIP	10K	5%	1/16W
R735	1-216-834-11	METAL CHIP	12K	5%	1/16W	R805	1-216-845-11	METAL CHIP	100K	5%	1/16W
R736	1-216-864-11	METAL CHIP	0	5%	1/16W	R806	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W
R738	1-216-821-11	METAL CHIP	1K	5%	1/16W	R807	1-216-817-11	METAL CHIP	470	5%	1/16W
R739	1-216-833-11	METAL CHIP	10K	5%	1/16W	R808	1-216-801-11	METAL CHIP	22	5%	1/16W
R742	1-216-821-11	METAL CHIP	1K	5%	1/16W	R809	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R744	1-216-833-11	METAL CHIP	10K	5%	1/16W	R810	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R745	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R812	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R748	1-216-864-11	METAL CHIP	0	5%	1/16W	R813	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R749	1-216-841-11	METAL CHIP	47K	5%	1/16W	R816	1-216-833-11	METAL CHIP	10K	5%	1/16W
R750	1-216-842-11	METAL CHIP	56K	5%	1/16W	R819	1-216-805-11	METAL CHIP	47	5%	1/16W
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W	R821	1-216-863-11	METAL CHIP	3. 3M	5%	1/16W
R752	1-216-817-11	METAL CHIP	470	5%	1/16W	R823	1-218-721-11	METAL CHIP	16K	0. 50%	1/16W
R753	1-216-834-11	METAL CHIP	12K	5%	1/16W	R825	1-216-832-11	METAL CHIP	8. 2K	5%	1/16W
R754	1-216-821-11	METAL CHIP	1K	5%	1/16W	R826	1-216-833-11	METAL CHIP	10K	5%	1/16W
R755	1-216-821-11	METAL CHIP	1K	5%	1/16W	R827	1-216-833-11	METAL CHIP	10K	5%	1/16W
R756	1-216-857-11	METAL CHIP	1M	5%	1/16W	R828	1-218-716-11	METAL CHIP	10K	0. 50%	1/16W
R757	1-216-857-11	METAL CHIP	1M	5%	1/16W	R829	1-218-744-11	METAL CHIP	150K	0. 50%	1/16W
R758	1-216-841-11	METAL CHIP	47K	5%	1/16W	R830	1-216-821-11	METAL CHIP	1K	5%	1/16W
R759	1-216-821-11	METAL CHIP	1K	5%	1/16W	R851	1-216-837-11	METAL CHIP	22K	5%	1/16W
R760	1-216-857-11	METAL CHIP	1M	5%	1/16W	R852	1-216-821-11	METAL CHIP	1K	5%	1/16W
R761	1-216-841-11	METAL CHIP	47K	5%	1/16W	R853	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R762	1-216-821-11	METAL CHIP	1K	5%	1/16W	R854	1-216-833-11	METAL CHIP	10K	5%	1/16W
R769	1-216-821-11	METAL CHIP	1K	5%	1/16W	R855	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W
R770	1-216-821-11	METAL CHIP	1K	5%	1/16W	R856	1-216-837-11	METAL CHIP	22K	5%	1/16W
R771	1-216-821-11	METAL CHIP	1K	5%	1/16W	R857	1-216-848-11	METAL CHIP	180K	5%	1/16W
R775	1-216-833-11	METAL CHIP	10K	5%	1/16W	R858	1-216-837-11	METAL CHIP	22K	5%	1/16W
R776	1-216-841-11	METAL CHIP	47K	5%	1/16W	R859	1-216-845-11	METAL CHIP	100K	5%	1/16W
R777	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R860	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R778	1-216-839-11	METAL CHIP	33K	5%	1/16W	R861	1-218-724-11	METAL CHIP	22K	0. 50%	1/16W
R779	1-216-833-11	METAL CHIP	10K	5%	1/16W	R862	1-216-848-11	METAL CHIP	180K	5%	1/16W
R780	1-216-821-11	METAL CHIP	1K	5%	1/16W	R863	1-216-855-11	METAL CHIP	680K	5%	1/16W
R781	1-216-833-11	METAL CHIP	10K	5%	1/16W	R864	1-216-134-00	METAL CHIP	2. 2	5%	1/8W
R782	1-216-813-11	METAL CHIP	220	5%	1/16W	R865	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R783	1-216-863-11	METAL CHIP	3. 3M	5%	1/16W	R866	1-216-820-11	METAL CHIP	820	5%	1/16W
R784	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W	R867	1-216-837-11	METAL CHIP	22K	5%	1/16W
R785	1-216-841-11	METAL CHIP	47K	5%	1/16W	R868	1-216-833-11	METAL CHIP	10K	5%	1/16W
R787	1-216-821-11	METAL CHIP	1K	5%	1/16W	R869	1-216-838-11	METAL CHIP	27K	5%	1/16W
R788	1-216-821-11	METAL CHIP	1K	5%	1/16W	R870	1-216-841-11	METAL CHIP	47K	5%	1/16W
R791	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R871	1-216-833-11	METAL CHIP	10K	5%	1/16W
R792	1-216-833-11	METAL CHIP	10K	5%	1/16W	R872	1-216-851-11	METAL CHIP	330K	5%	1/16W
R793	1-216-821-11	METAL CHIP	1K	5%	1/16W	R873	1-216-814-11	METAL CHIP	270	5%	1/16W
R794	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R874	1-216-842-11	METAL CHIP	56K	5%	1/16W
R795	1-216-815-11	METAL CHIP	330	5%	1/16W	< NETWORK, RES >					
R796	1-216-817-11	METAL CHIP	470	5%	1/16W	RB701	1-236-420-11	NETWORK, RES	4. 7K		
R797	1-216-818-11	METAL CHIP	560	5%	1/16W	RB702	1-236-432-11	NETWORK, RES	47K		
R800	1-216-309-00	METAL CHIP	5. 6	5%	1/10W	RB703	1-236-412-11	NETWORK, RES	1. 0K		
R801	1-216-864-11	METAL CHIP	0	5%	1/16W	RB704	1-236-416-11	NETWORK, RES	2. 2K		
R802	1-216-835-11	METAL CHIP	15K	5%	1/16W						

Ref. No.	Part No.	Description	Remark
RB705	1-236-416-11	NETWORK, RES 2.2K	
RB706	1-236-412-11	NETWORK, RES 1.0K	
RB707	1-236-412-11	NETWORK, RES 1.0K	
RB708	1-236-412-11	NETWORK, RES 1.0K	

< CRYSTAL >

X701	1-579-553-11	VIBRATOR (12MHz)	
X801	1-579-621-11	VIBRATOR, CRYSTAL (28.6363MHz)	

*	A-7063-220-A	VF-42 BOARD, COMPLETE	

		(Ref. No 1,000 Series)	

3-942-888-01 HOLDER, LED

< CAPACITOR >

C501	1-126-176-11	ELECT	220uF	20%	10V
C502	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
△C504	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
△C505	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V
△C506	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V
C507	1-127-515-11	ELECT(SOLID)	47uF	20%	6.3V
C508	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
C509	1-124-257-00	ELECT	2.2uF	20%	50V
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C511	1-126-090-11	ELECT	82uF	20%	10V
C512	1-137-306-11	FILM CHIP	0.1uF	5%	16V
C513	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C514	1-131-381-00	TANTALUM	47uF	10%	10V
C515	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C516	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V

< CONNECTOR >

* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	

< DIODE >

D501	8-719-820-65	DIODE TLS221	
D502	8-719-984-02	LED	BR4371F
D503	8-719-400-20	DIODE MA152WA	

< IC >

IC501	8-759-420-01	IC AN2512S	
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< COIL >

L501	1-408-976-21	INDUCTOR	33uH
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Ref. No.	Part No.	Description	Remark
L502	1-408-785-21	INDUCTOR CHIP 47uH	
△L503	1-459-876-41	COIL, FERRITE (HLC)	

< TRANSISTOR >

Q501	8-729-100-66	TRANSISTOR 2SC1623	
Q502	8-729-216-31	TRANSISTOR 2SA1163-G	
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP	

< RESISTOR >

R501	1-216-033-00	METAL CHIP	220	5%	1/10W
R502	1-216-041-00	METAL CHIP	470	5%	1/10W
R503	1-216-041-00	METAL CHIP	470	5%	1/10W
R506	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R507	1-216-047-00	METAL CHIP	820	5%	1/10W
R508	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R509	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R510	1-216-005-00	METAL CHIP	15	5%	1/10W
R511	1-216-121-00	METAL CHIP	1M	5%	1/10W
R512	1-216-131-11	METAL CHIP	2.7M	5%	1/10W
R513	1-216-101-00	METAL CHIP	150K	5%	1/10W
R514	1-216-121-00	METAL CHIP	1M	5%	1/10W
R515	1-216-131-11	METAL CHIP	2.7M	5%	1/10W
R516	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R517	1-216-025-00	METAL CHIP	100	5%	1/10W
R518	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R519	1-216-336-11	METAL CHIP	47K	1%	1/10W
R520	1-216-107-00	METAL CHIP	270K	5%	1/10W
R521	1-216-121-00	METAL CHIP	1M	5%	1/10W
R522	1-216-160-00	METAL CHIP	27	5%	1/8W
R523	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R524	1-216-113-00	METAL CHIP	470K	5%	1/10W
R525	1-216-097-00	METAL CHIP	100K	5%	1/10W

< VARIABLE RESISTOR >

RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K	
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470	
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K	
RV504	1-228-762-00	RES, ADJ, METAL CHIP 1M	

< TRANSFORMER >

△T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK	
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< THERMISTOR >

TH501	1-809-350-21	THERMISTOR, NTC (2125) 500	
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< CABLE, FLAT >

△W501	1-540-019-21	SOCKET ASSY, CRT	
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The components identified by mark
△ or dotted line with mark △ are
critical for safety.
Replace only with part number
specified.

VK-27**VS-95**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-7071-653-A	VK-27 BOARD, COMPLETE ***** (Ref. No 9,000 Series)		C026	1-164-360-11	CERAMIC CHIP 0.1uF	16V
		(DIODE)		C027	1-164-360-11	CERAMIC CHIP 0.1uF	16V
D976	8-719-404-46	DIODE MA110		C028	1-162-974-11	CERAMIC CHIP 0.01uF	50V
		(SWITCH)		C029	1-164-360-11	CERAMIC CHIP 0.1uF	16V
S976	1-572-921-31	SWITCH, KEY BOARD (STOP)		C030	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
S977	1-692-260-11	SWITCH, SLIDE (POWER)		C035	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V
S978	1-692-247-11	SWITCH, TACTIL (2 CLICK)	(EDIT SEARCH (-))	C049	1-162-974-11	CERAMIC CHIP 0.01uF	50V
S979	1-572-921-31	SWITCH, KEY BOARD (REW)		C057	1-162-974-11	CERAMIC CHIP 0.01uF	50V
S980	1-572-921-31	SWITCH, KEY BOARD (PB)		C058	1-162-974-11	CERAMIC CHIP 0.01uF	50V
S981	1-692-247-11	SWITCH, TACTIL (2 CLICK)	(EDIT SEARCH (+))	C059	1-162-974-11	CERAMIC CHIP 0.01uF	50V
S983	1-572-921-31	SWITCH, KEY BOARD (FF)		C061	1-162-974-11	CERAMIC CHIP 0.01uF	50V
S984	1-572-921-31	SWITCH, KEY BOARD (PAUSE)		C063	1-162-974-11	CERAMIC CHIP 0.01uF	50V
		(CABLE, FLAT)		C064	1-162-995-11	CERAMIC CHIP 0.022uF	50V
W987	1-696-622-11	PF-591 FLEXIBLE BOARD		C065	1-162-974-11	CERAMIC CHIP 0.01uF	50V
*****				C066	1-162-974-11	CERAMIC CHIP 0.01uF	50V
*	A-7063-316-A	VS-95 BOARD, COMPLETE ***** (Ref. No 4,000 Series)		C067	1-162-995-11	CERAMIC CHIP 0.022uF	50V
		1-691-471-11 CONNECTOR, TRANSLATION 11P		C068	1-162-949-11	CERAMIC CHIP 47PF	5% 50V
		(CAPACITOR)		C069	1-162-948-11	CERAMIC CHIP 39PF	5% 50V
C001	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C070	1-162-953-11	CERAMIC CHIP 100PF	5% 50V
C002	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C072	1-162-943-11	CERAMIC CHIP 15PF	5% 50V
C003	1-162-955-11	CERAMIC CHIP 150PF	5% 50V	C073	1-162-951-11	CERAMIC CHIP 68PF	5% 50V
C004	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C074	1-162-956-11	CERAMIC CHIP 180PF	5% 50V
C005	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C075	1-162-942-11	CERAMIC CHIP 12PF	5% 50V
C006	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C077	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C009	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C078	1-162-934-11	CERAMIC CHIP 3PF	0.25PF50V
C010	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V	C080	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C011	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C081	1-162-944-11	CERAMIC CHIP 18PF	5% 50V
C012	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C082	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C013	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C083	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C014	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C085	1-162-947-11	CERAMIC CHIP 33PF	5% 50V
C018	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C086	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C019	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C091	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C020	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C121	1-162-971-11	CERAMIC CHIP 0.001uF	50V
C021	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C122	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C022	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C123	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
C023	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C124	1-164-346-11	CERAMIC CHIP 1uF	16V
C024	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C125	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C025	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C126	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
				C127	1-164-145-11	CERAMIC CHIP 390PF	5% 50V
				C128	1-162-943-11	CERAMIC CHIP 15PF	5% 50V
				C129	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
				C130	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
				C131	1-162-974-11	CERAMIC CHIP 0.01uF	50V
				C132	1-163-118-00	CERAMIC CHIP 110PF	5% 50V
				C133	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V
				C135	1-162-974-11	CERAMIC CHIP 0.01uF	50V
				C136	1-162-974-11	CERAMIC CHIP 0.01uF	50V
				C137	1-162-974-11	CERAMIC CHIP 0.01uF	50V
				C150	1-162-944-11	CERAMIC CHIP 18PF	5% 50V
				C151	1-162-974-11	CERAMIC CHIP 0.01uF	50V

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C156	1-162-948-11	CERAMIC CHIP	39PF	5%	50V	C238	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C159	1-162-946-11	CERAMIC CHIP	27PF	5%	50V	C239	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C161	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	C240	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C167	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C241	1-126-607-11	ELECT CHIP	47uF	20%	4V
C170	1-162-568-11	CERAMIC CHIP	0.33uF		25V	C242	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C171	1-162-638-11	CERAMIC CHIP	1uF		16V	C245	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C173	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C246	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C175	1-128-004-11	ELECT CHIP	10uF	20%	16V	C247	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C176	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C248	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C177	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C249	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C178	1-164-145-11	CERAMIC CHIP	390PF	5%	50V	C250	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C179	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C254	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C180	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	C255	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C181	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C182	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	C257	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C187	1-162-943-11	CERAMIC CHIP	15PF	5%	50V	C259	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C188	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	C260	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C189	1-164-362-11	CERAMIC CHIP	470PF	5%	50V	C261	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C192	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	C262	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C193	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	C263	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C194	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C264	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C199	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	C265	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C205	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	C266	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C206	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C207	1-162-952-11	CERAMIC CHIP	82PF	5%	50V	C268	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C208	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C209	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C270	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C213	1-164-222-11	CERAMIC CHIP	0.22uF		25V	C271	1-128-004-11	ELECT CHIP	10uF	20%	16V
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V	C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C216	1-128-004-11	ELECT CHIP	10uF	20%	16V	C273	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C217	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	C278	1-162-638-11	CERAMIC CHIP	1uF		16V
C218	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C279	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C219	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C280	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C220	1-126-246-11	ELECT CHIP	220uF	20%	4V	C281	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V
C221	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V	C282	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C222	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C283	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C223	1-128-004-11	ELECT CHIP	10uF	20%	16V	C284	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C225	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C285	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C226	1-164-005-11	CERAMIC CHIP	0.47uF		25V	C286	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C288	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C228	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C229	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C230	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C291	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C231	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C292	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C232	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	C294	1-162-638-11	CERAMIC CHIP	1uF		16V
C233	1-128-004-11	ELECT CHIP	10uF	20%	16V	C295	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C234	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V	C297	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C236	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C298	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C237	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C299	1-162-949-11	CERAMIC CHIP	47PF	5%	50V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C300	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C450	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C301	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C451	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C302	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C452	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C303	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V	C453	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
C304	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C454	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
C305	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C455	1-162-969-11	CERAMIC CHIP 0.0068uF	10% 25V
C306	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C456	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V
C307	1-135-091-00	TANTALUM CHIP 1uF	20% 16V	C457	1-162-969-11	CERAMIC CHIP 0.0068uF	10% 25V
C401	1-164-346-11	CERAMIC CHIP 1uF	16V	C458	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C402	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C459	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C404	1-164-346-11	CERAMIC CHIP 1uF	16V	C460	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C406	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C461	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V
C407	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C462	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C408	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C463	1-135-215-21	TANTAL. CHIP 6.8uF	20% 16V
C409	1-162-966-11	CERAMIC CHIP 0.0022uF	10% 50V	C464	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V
C412	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V	C465	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V
C413	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C466	1-164-298-11	CERAMIC CHIP 0.15uF	10% 25V
C414	1-162-919-11	CERAMIC CHIP 22PF	5% 50V	C467	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C415	1-165-128-11	CERAMIC CHIP 0.22uF	16V	C468	1-164-298-11	CERAMIC CHIP 0.15uF	10% 25V
C416	1-162-916-11	CERAMIC CHIP 12PF	5% 50V	C469	1-162-967-11	CERAMIC CHIP 0.0033uF	10% 50V
C417	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C470	1-162-967-11	CERAMIC CHIP 0.0033uF	10% 50V
C418	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C471	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C420	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C472	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C421	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C473	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V
C422	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C474	1-162-967-11	CERAMIC CHIP 0.0033uF	10% 50V
C423	1-164-361-11	CERAMIC CHIP 0.047uF	16V	C475	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C424	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C476	1-135-179-21	TANTAL. CHIP 2.2uF	20% 16V
C425	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C477	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C426	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C478	1-162-921-11	CERAMIC CHIP 33PF	5% 50V
C427	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C481	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C428	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C482	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C429	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C483	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C430	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C484	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C431	1-162-965-11	CERAMIC CHIP 0.0015uF	10% 50V	C485	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C432	1-164-173-11	CERAMIC CHIP 0.0039uF	10% 50V	C486	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C433	1-162-937-11	CERAMIC CHIP 6PF	0.5PF 50V	C487	1-128-530-11	ELECT CHIP 33uF	20% 10V
C434	1-162-942-11	CERAMIC CHIP 12PF	5% 50V	< FILTER, CERAMIC >			
C435	1-162-974-11	CERAMIC CHIP 0.01uF	50V	CF151	1-579-371-11	FILTER, CERAMIC	
C436	1-162-974-11	CERAMIC CHIP 0.01uF	50V	< CONNECTOR >			
C437	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN002	1-569-775-21	PIN, CONNECTOR 5P	
C438	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN101	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P	
C439	1-162-909-11	CERAMIC CHIP 4PF	0.25PF 50V	CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
C440	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	CN401	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
C441	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	CN403	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P	
C442	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN404	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P	
C444	1-162-995-11	CERAMIC CHIP 0.022uF	50V	CN406	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P	
C445	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	* CN407	1-580-055-21	PIN, CONNECTOR 2P	
C446	1-162-995-11	CERAMIC CHIP 0.022uF	50V				
C447	1-162-974-11	CERAMIC CHIP 0.01uF	50V				
C449	1-164-360-11	CERAMIC CHIP 0.1uF	16V				

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< DIODE >							
D001	8-719-800-76	DIODE 1SS123		L008	1-410-658-31	INDUCTOR CHIP 220uH	
D121	8-719-027-50	DIODE MA142WK		L009	1-410-380-31	INDUCTOR CHIP 8.2uH	
D152	8-719-027-48	DIODE MA142WA		L010	1-410-655-31	INDUCTOR CHIP 120uH	
D159	8-719-027-50	DIODE MA142WK		L011	1-412-280-31	INDUCTOR 330uH	
D160	8-719-027-50	DIODE MA142WK		L012	1-410-387-11	INDUCTOR CHIP 33uH	
D161	8-719-404-46	DIODE MA110		L013	1-410-657-21	INDUCTOR CHIP 180uH	
D162	8-719-027-50	DIODE MA142WK		L015	1-410-381-11	INDUCTOR CHIP 10uH	
D163	8-719-027-50	DIODE MA142WK		L121	1-410-381-11	INDUCTOR CHIP 10uH	
D401	8-719-421-27	DIODE MA728		L150	1-410-384-31	INDUCTOR CHIP 18uH	
D402	8-719-027-50	DIODE MA142WK		L152	1-410-385-11	INDUCTOR CHIP 22uH	
D403	8-719-404-46	DIODE MA110		L154	1-410-390-11	INDUCTOR CHIP 56uH	
< FILTER >				L155	1-410-390-11	INDUCTOR CHIP 56uH	
FL121	1-236-188-11	FILTER, BAND PASS		L160	1-412-058-11	INDUCTOR CHIP 10uH	
FL152	1-236-849-21	FILTER, BAND PASS		L161	1-410-385-11	INDUCTOR CHIP 22uH	
FL153	1-236-186-11	FILTER, BAND PASS		L162	1-412-280-31	INDUCTOR 330uH	
FL154	1-239-055-21	FILTER, LOW PASS (CCD. PAL. Y)		L163	1-410-167-41	INDUCTOR CHIP 820uH	
FL155	1-236-848-21	FILTER, LOW PASS		L164	1-410-657-21	INDUCTOR CHIP 180uH	
FL401	1-406-452-11	COIL, OSC		L169	1-410-392-11	INDUCTOR CHIP 82uH	
< IC >				L170	1-410-381-11	INDUCTOR CHIP 10uH	
IC001	8-752-033-38	IC CXA1202R		L171	1-410-384-31	INDUCTOR CHIP 18uH	
IC003	8-752-053-21	IC CXA1211M		L175	1-410-393-11	INDUCTOR CHIP 100uH	
IC121	8-759-605-61	IC CXA1203N		L176	1-410-656-11	INDUCTOR CHIP 150uH	
IC151	8-752-065-54	IC CXA1207AR		L177	1-412-058-11	INDUCTOR CHIP 10uH	
IC152	8-752-065-56	IC CXA1208R		L178	1-412-062-11	INDUCTOR CHIP 47uH	
IC154	8-752-333-24	IC CXL1506M		L179	1-410-379-31	INDUCTOR CHIP 6.8uH	
IC155	8-752-053-21	IC CXA1211M		L180	1-410-393-11	INDUCTOR CHIP 100uH	
IC156	8-759-055-82	IC M62353GP		L181	1-410-393-11	INDUCTOR CHIP 100uH	
IC158	8-759-055-82	IC M62353GP		L182	1-410-655-31	INDUCTOR CHIP 120uH	
IC159	8-759-636-33	IC CXA1452N		L185	1-412-058-11	INDUCTOR CHIP 10uH	
IC401	8-759-056-84	IC S-8420AF		L186	1-412-052-21	INDUCTOR CHIP 1uH	
IC402	8-752-838-20	IC CXP80624-428R		L401	1-412-056-11	INDUCTOR CHIP 4.7uH	
IC403	8-759-096-79	IC uPD75316GF-318-389		L402	1-412-058-11	INDUCTOR CHIP 10uH	
IC404	8-759-059-42	IC CXA1481AR		L403	1-412-062-11	INDUCTOR CHIP 47uH	
IC405	8-759-044-78	IC BR9011BF-RE2		L404	1-412-058-11	INDUCTOR CHIP 10uH	
IC406	8-759-081-96	IC uPD6456GS-620		L405	1-412-058-11	INDUCTOR CHIP 10uH	
IC407	8-759-145-63	IC uPD7564G-540		L406	1-412-058-11	INDUCTOR CHIP 10uH	
IC408	8-759-057-60	IC MCD004BM		L407	1-412-052-21	INDUCTOR CHIP 1uH	
IC409	8-759-999-02	IC TL1596CDB		< LINK, IC >			
IC410	8-759-062-02	IC MPC1720VM		△PS401	1-576-122-21	LINK, IC (CCP2E10 0.4A)	
< COIL >				△PS402	1-576-123-21	LINK, IC (CCP2E20 0.8A)	
L001	1-410-381-11	INDUCTOR CHIP 10uH		< TRANSISTOR >			
L002	1-412-066-21	INDUCTOR CHIP 220uH		Q001	8-729-216-22	TRANSISTOR 2SA1162	
L003	1-412-066-21	INDUCTOR CHIP 220uH		Q003	8-729-402-55	TRANSISTOR 2SB1218A-R	
L005	1-412-060-11	INDUCTOR CHIP 22uH		Q008	8-729-402-32	TRANSISTOR 2SD1819A-R	
L007	1-412-058-11	INDUCTOR CHIP 10uH		Q010	8-729-403-35	TRANSISTOR UN5113	
				Q019	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
				Q020	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
				Q021	8-729-905-23	TRANSISTOR 2SA1576-R	

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q022	8-729-402-55	TRANSISTOR 2SB1218A-R		Q229	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q024	8-729-102-07	TRANSISTOR 2SC2223-F13		Q230	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q025	8-729-014-16	TRANSISTOR RN2302		Q231	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R		Q232	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q121	8-729-403-35	TRANSISTOR UN5113		Q233	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q123	8-729-402-42	TRANSISTOR UN5213		Q234	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q124	8-729-403-35	TRANSISTOR UN5113		Q236	8-729-420-56	TRANSISTOR UN511E	
Q125	8-729-117-73	TRANSISTOR 2SC4178-F14		Q237	8-729-425-50	TRANSISTOR 2SB1462Q	
Q126	8-729-402-32	TRANSISTOR 2SD1819A-R		Q401	8-729-402-48	TRANSISTOR UN521E	
Q151	8-729-101-07	TRANSISTOR 2SB798-DL		Q403	8-729-403-35	TRANSISTOR UN5113	
Q152	8-729-402-32	TRANSISTOR 2SD1819A-R		Q405	8-729-907-00	TRANSISTOR DTC114EU	
Q154	8-729-402-32	TRANSISTOR 2SD1819A-R		Q409	8-729-017-67	TRANSISTOR 2SB1574	
Q158	8-729-402-32	TRANSISTOR 2SD1819A-R					
Q160	8-729-403-35	TRANSISTOR UN5113				(RESISTOR)	
Q161	8-729-402-32	TRANSISTOR 2SD1819A-R		R001	1-216-801-11	METAL CHIP 22 5% 1/16W	
Q162	8-729-403-35	TRANSISTOR UN5113		R002	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q166	8-729-402-55	TRANSISTOR 2SB1218A-R		R004	1-216-815-11	METAL CHIP 330 5% 1/16W	
Q168	8-729-403-35	TRANSISTOR UN5113		R005	1-216-817-11	METAL CHIP 470 5% 1/16W	
Q170	8-729-420-20	TRANSISTOR XN4312		R006	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q171	8-729-117-73	TRANSISTOR 2SC4178-F14		R007	1-216-839-11	METAL CHIP 33K 5% 1/16W	
Q175	8-729-402-32	TRANSISTOR 2SD1819A-R		R012	1-216-835-11	METAL CHIP 15K 5% 1/16W	
Q176	8-729-402-32	TRANSISTOR 2SD1819A-R		R013	1-216-841-11	METAL CHIP 47K 5% 1/16W	
Q177	8-729-402-55	TRANSISTOR 2SB1218A-R		R016	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q178	8-729-402-55	TRANSISTOR 2SB1218A-R		R017	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q180	8-729-422-54	TRANSISTOR XN4215		R020	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
Q182	8-729-402-32	TRANSISTOR 2SD1819A-R		R021	1-216-836-11	METAL CHIP 18K 5% 1/16W	
Q183	8-729-420-53	TRANSISTOR UN5115		R022	1-216-840-11	METAL CHIP 39K 5% 1/16W	
Q184	8-729-402-32	TRANSISTOR 2SD1819A-R		R023	1-216-838-11	METAL CHIP 27K 5% 1/16W	
Q189	8-729-402-32	TRANSISTOR 2SD1819A-R		R024	1-216-838-11	METAL CHIP 27K 5% 1/16W	
Q191	8-729-402-32	TRANSISTOR 2SD1819A-R		R025	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
Q192	8-729-402-32	TRANSISTOR 2SD1819A-R		R026	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
Q194	8-729-402-32	TRANSISTOR 2SD1819A-R		R027	1-216-841-11	METAL CHIP 47K 5% 1/16W	
Q195	8-729-402-55	TRANSISTOR 2SB1218A-R		R028	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q196	8-729-403-35	TRANSISTOR UN5113		R029	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
Q199	8-729-807-87	TRANSISTOR 2SB1295-UL6		R030	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q200	8-729-013-88	TRANSISTOR RN1302		R031	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
Q203	8-729-402-55	TRANSISTOR 2SB1218A-R		R033	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
Q204	8-729-402-32	TRANSISTOR 2SD1819A-R		R049	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
Q205	8-729-402-42	TRANSISTOR UN5213		R050	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
Q207	8-729-403-35	TRANSISTOR UN5113		R051	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
Q208	8-729-013-88	TRANSISTOR RN1302		R052	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
Q210	8-729-402-42	TRANSISTOR UN5213		R054	1-216-817-11	METAL CHIP 470 5% 1/16W	
Q212	8-729-402-55	TRANSISTOR 2SB1218A-R		R055	1-216-820-11	METAL CHIP 820 5% 1/16W	
Q214	8-729-420-12	TRANSISTOR XN4213		R056	1-216-864-11	METAL CHIP 0 5% 1/16W	
Q217	8-729-402-42	TRANSISTOR UN5213		R057	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q219	8-729-403-35	TRANSISTOR UN5113		R058	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q220	8-729-402-42	TRANSISTOR UN5213		R060	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
Q221	8-729-420-12	TRANSISTOR XN4213		R061	1-216-821-11	METAL CHIP 1K 5% 1/16W	
Q222	8-729-402-32	TRANSISTOR 2SD1819A-R		R062	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q223	8-729-402-42	TRANSISTOR UN5213		R063	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R064	1-216-817-11	METAL CHIP	470	5%	1/16W	R158	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R065	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R160	1-216-819-11	METAL CHIP	680	5%	1/16W
R066	1-216-809-11	METAL CHIP	100	5%	1/16W	R161	1-216-809-11	METAL CHIP	100	5%	1/16W
R067	1-216-836-11	METAL CHIP	18K	5%	1/16W	R164	1-216-811-11	METAL CHIP	150	5%	1/16W
R070	1-216-834-11	METAL CHIP	12K	5%	1/16W	R167	1-216-820-11	METAL CHIP	820	5%	1/16W
R071	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R168	1-216-820-11	METAL CHIP	820	5%	1/16W
R072	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	R170	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R076	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R175	1-216-810-11	METAL CHIP	120	5%	1/16W
R078	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	R177	1-216-819-11	METAL CHIP	680	5%	1/16W
R079	1-216-833-11	METAL CHIP	10K	5%	1/16W	R178	1-216-817-11	METAL CHIP	470	5%	1/16W
R081	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	R179	1-216-820-11	METAL CHIP	820	5%	1/16W
R082	1-216-804-11	METAL CHIP	39	5%	1/16W	R189	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R083	1-216-821-11	METAL CHIP	1K	5%	1/16W	R190	1-216-837-11	METAL CHIP	22K	5%	1/16W
R085	1-216-821-11	METAL CHIP	1K	5%	1/16W	R191	1-216-864-11	METAL CHIP	0	5%	1/16W
R086	1-216-817-11	METAL CHIP	470	5%	1/16W	R192	1-216-833-11	METAL CHIP	10K	5%	1/16W
R087	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R193	1-216-841-11	METAL CHIP	47K	5%	1/16W
R088	1-216-808-11	METAL CHIP	82	5%	1/16W	R194	1-216-833-11	METAL CHIP	10K	5%	1/16W
R090	1-216-836-11	METAL CHIP	18K	5%	1/16W	R196	1-216-815-11	METAL CHIP	330	5%	1/16W
R097	1-216-821-11	METAL CHIP	1K	5%	1/16W	R198	1-216-817-11	METAL CHIP	470	5%	1/16W
R122	1-216-833-11	METAL CHIP	10K	5%	1/16W	R200	1-216-821-11	METAL CHIP	1K	5%	1/16W
R123	1-216-845-11	METAL CHIP	100K	5%	1/16W	R201	1-216-815-11	METAL CHIP	330	5%	1/16W
R124	1-216-845-11	METAL CHIP	100K	5%	1/16W	R202	1-216-840-11	METAL CHIP	39K	5%	1/16W
R125	1-216-845-11	METAL CHIP	100K	5%	1/16W	R203	1-216-837-11	METAL CHIP	22K	5%	1/16W
R126	1-216-845-11	METAL CHIP	100K	5%	1/16W	R204	1-216-821-11	METAL CHIP	1K	5%	1/16W
R127	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R205	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R129	1-216-845-11	METAL CHIP	100K	5%	1/16W	R206	1-216-813-11	METAL CHIP	220	5%	1/16W
R130	1-216-833-11	METAL CHIP	10K	5%	1/16W	R208	1-216-864-11	METAL CHIP	0	5%	1/16W
R131	1-216-841-11	METAL CHIP	47K	5%	1/16W	R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R132	1-216-833-11	METAL CHIP	10K	5%	1/16W	R213	1-216-835-11	METAL CHIP	15K	5%	1/16W
R133	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R216	1-216-837-11	METAL CHIP	22K	5%	1/16W
R134	1-216-833-11	METAL CHIP	10K	5%	1/16W	R217	1-216-837-11	METAL CHIP	22K	5%	1/16W
R135	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R218	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R136	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R219	1-216-821-11	METAL CHIP	1K	5%	1/16W
R137	1-216-821-11	METAL CHIP	1K	5%	1/16W	R220	1-216-811-11	METAL CHIP	150	5%	1/16W
R138	1-216-839-11	METAL CHIP	33K	5%	1/16W	R221	1-216-864-11	METAL CHIP	0	5%	1/16W
R139	1-216-817-11	METAL CHIP	470	5%	1/16W	R222	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R140	1-216-833-11	METAL CHIP	10K	5%	1/16W	R223	1-216-835-11	METAL CHIP	15K	5%	1/16W
R141	1-216-821-11	METAL CHIP	1K	5%	1/16W	R224	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R142	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R226	1-216-819-11	METAL CHIP	680	5%	1/16W
R143	1-216-839-11	METAL CHIP	33K	5%	1/16W	R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R144	1-216-817-11	METAL CHIP	470	5%	1/16W	R230	1-216-807-11	METAL CHIP	68	5%	1/16W
R145	1-216-837-11	METAL CHIP	22K	5%	1/16W	R231	1-216-821-11	METAL CHIP	1K	5%	1/16W
R146	1-216-821-11	METAL CHIP	1K	5%	1/16W	R232	1-216-833-11	METAL CHIP	10K	5%	1/16W
R150	1-216-864-11	METAL CHIP	0	5%	1/16W	R238	1-216-821-11	METAL CHIP	1K	5%	1/16W
R151	1-216-296-00	METAL CHIP	0	5%	1/8W	R242	1-216-818-11	METAL CHIP	560	5%	1/16W
R152	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	R243	1-216-809-11	METAL CHIP	100	5%	1/16W
R153	1-216-304-11	METAL CHIP	3.3	5%	1/10W	R244	1-216-835-11	METAL CHIP	15K	5%	1/16W
R154	1-216-820-11	METAL CHIP	820	5%	1/16W	R245	1-216-817-11	METAL CHIP	470	5%	1/16W
R155	1-216-836-11	METAL CHIP	18K	5%	1/16W	R246	1-216-817-11	METAL CHIP	470	5%	1/16W
R156	1-216-296-00	METAL CHIP	0	5%	1/8W	R247	1-216-296-00	METAL CHIP	0	5%	1/8W

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Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R248	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R316	1-216-817-11	METAL CHIP	470	5%	1/16W
R250	1-216-810-11	METAL CHIP	120	5%	1/16W	R318	1-216-833-11	METAL CHIP	10K	5%	1/16W
R251	1-216-806-11	METAL CHIP	56	5%	1/16W	R320	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R253	1-216-821-11	METAL CHIP	1K	5%	1/16W	R321	1-216-816-11	METAL CHIP	390	5%	1/16W
R254	1-216-818-11	METAL CHIP	560	5%	1/16W	R323	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W	R324	1-216-817-11	METAL CHIP	470	5%	1/16W
R256	1-216-864-11	METAL CHIP	0	5%	1/16W	R329	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W
R257	1-216-818-11	METAL CHIP	560	5%	1/16W	R331	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W
R258	1-216-821-11	METAL CHIP	1K	5%	1/16W	R333	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W
R259	1-216-816-11	METAL CHIP	390	5%	1/16W	R334	1-216-833-11	METAL CHIP	10K	5%	1/16W
R260	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R335	1-216-821-11	METAL CHIP	1K	5%	1/16W
R263	1-216-864-11	METAL CHIP	0	5%	1/16W	R337	1-216-864-11	METAL CHIP	0	5%	1/16W
R266	1-216-864-11	METAL CHIP	0	5%	1/16W	R339	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R267	1-216-864-11	METAL CHIP	0	5%	1/16W	R341	1-216-841-11	METAL CHIP	47K	5%	1/16W
R270	1-216-864-11	METAL CHIP	0	5%	1/16W	R342	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R271	1-216-841-11	METAL CHIP	47K	5%	1/16W	R343	1-216-839-11	METAL CHIP	33K	5%	1/16W
R272	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R344	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R276	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W	R345	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R277	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W	R346	1-216-845-11	METAL CHIP	100K	5%	1/16W
R278	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R347	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R279	1-216-818-11	METAL CHIP	560	5%	1/16W	R349	1-216-834-11	METAL CHIP	12K	5%	1/16W
R280	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R350	1-216-838-11	METAL CHIP	27K	5%	1/16W
R281	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W	R352	1-216-864-11	METAL CHIP	0	5%	1/16W
R282	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R353	1-216-864-11	METAL CHIP	0	5%	1/16W
R283	1-216-821-11	METAL CHIP	1K	5%	1/16W	R357	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W
R285	1-216-833-11	METAL CHIP	10K	5%	1/16W	R358	1-216-828-11	METAL CHIP	3. 9K	5%	1/16W
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W	R359	1-216-296-00	METAL CHIP	0	5%	1/8W
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W	R360	1-216-296-00	METAL CHIP	0	5%	1/8W
R291	1-216-820-11	METAL CHIP	820	5%	1/16W	R361	1-216-864-11	METAL CHIP	0	5%	1/16W
R293	1-216-807-11	METAL CHIP	68	5%	1/16W	R362	1-216-810-11	METAL CHIP	120	5%	1/16W
R294	1-216-845-11	METAL CHIP	100K	5%	1/16W	R366	1-216-844-11	METAL CHIP	82K	5%	1/16W
R295	1-216-853-11	METAL CHIP	470K	5%	1/16W	R371	1-216-857-11	METAL CHIP	1M	5%	1/16W
R297	1-216-820-11	METAL CHIP	820	5%	1/16W	R373	1-216-817-11	METAL CHIP	470	5%	1/16W
R298	1-216-820-11	METAL CHIP	820	5%	1/16W	R374	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W
R299	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R375	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R300	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W	R376	1-216-817-11	METAL CHIP	470	5%	1/16W
R301	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R377	1-216-821-11	METAL CHIP	1K	5%	1/16W
R302	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R378	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R303	1-216-846-11	METAL CHIP	120K	5%	1/16W	R379	1-216-821-11	METAL CHIP	1K	5%	1/16W
R304	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R380	1-216-839-11	METAL CHIP	33K	5%	1/16W
R305	1-216-818-11	METAL CHIP	560	5%	1/16W	R381	1-216-839-11	METAL CHIP	33K	5%	1/16W
R306	1-216-821-11	METAL CHIP	1K	5%	1/16W	R382	1-216-842-11	METAL CHIP	56K	5%	1/16W
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W	R383	1-216-821-11	METAL CHIP	1K	5%	1/16W
R308	1-216-819-11	METAL CHIP	680	5%	1/16W	R384	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R309	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W	R385	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R310	1-216-848-11	METAL CHIP	180K	5%	1/16W	R386	1-216-842-11	METAL CHIP	56K	5%	1/16W
R311	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R387	1-216-821-11	METAL CHIP	1K	5%	1/16W
R312	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R388	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R314	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R389	1-216-821-11	METAL CHIP	1K	5%	1/16W
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W	R390	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R391	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R451	1-216-841-11	METAL CHIP	47K	5%	1/16W
R392	1-216-837-11	METAL CHIP	22K	5%	1/16W	R452	1-216-833-11	METAL CHIP	10K	5%	1/16W
R393	1-216-833-11	METAL CHIP	10K	5%	1/16W	R453	1-216-841-11	METAL CHIP	47K	5%	1/16W
R394	1-216-841-11	METAL CHIP	47K	5%	1/16W	R454	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R397	1-216-820-11	METAL CHIP	820	5%	1/16W	R456	1-216-833-11	METAL CHIP	10K	5%	1/16W
R398	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R457	1-216-837-11	METAL CHIP	22K	5%	1/16W
R401	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R460	1-216-864-11	METAL CHIP	0	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	R461	1-216-845-11	METAL CHIP	100K	5%	1/16W
R404	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W	R462	1-216-809-11	METAL CHIP	100	5%	1/16W
R405	1-216-821-11	METAL CHIP	1K	5%	1/16W	R463	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R407	1-216-821-11	METAL CHIP	1K	5%	1/16W	R468	1-216-039-00	METAL CHIP	390	5%	1/10W
R408	1-216-833-11	METAL CHIP	10K	5%	1/16W	R469	1-216-838-11	METAL CHIP	27K	5%	1/16W
R409	1-216-841-11	METAL CHIP	47K	5%	1/16W	R470	1-216-838-11	METAL CHIP	27K	5%	1/16W
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W	R471	1-216-838-11	METAL CHIP	27K	5%	1/16W
R411	1-216-821-11	METAL CHIP	1K	5%	1/16W	R472	1-216-833-11	METAL CHIP	10K	5%	1/16W
R412	1-216-841-11	METAL CHIP	47K	5%	1/16W	R473	1-216-833-11	METAL CHIP	10K	5%	1/16W
R413	1-216-821-11	METAL CHIP	1K	5%	1/16W	R474	1-217-671-11	METAL CHIP	1	5%	1/10W
R414	1-216-821-11	METAL CHIP	1K	5%	1/16W	R475	1-217-671-11	METAL CHIP	1	5%	1/10W
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W	R476	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W	R479	1-216-845-11	METAL CHIP	100K	5%	1/16W
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W	R480	1-217-671-11	METAL CHIP	1	5%	1/10W
R418	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R481	1-217-671-11	METAL CHIP	1	5%	1/10W
R419	1-216-845-11	METAL CHIP	100K	5%	1/16W	R484	1-216-845-11	METAL CHIP	100K	5%	1/16W
R420	1-216-856-11	METAL CHIP	820K	5%	1/16W	R485	1-216-845-11	METAL CHIP	100K	5%	1/16W
R421	1-216-851-11	METAL CHIP	330K	5%	1/16W	R487	1-216-864-11	METAL CHIP	0	5%	1/16W
R422	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R489	1-216-831-11	METAL CHIP	6. 8K	5%	1/16W
R423	1-216-837-11	METAL CHIP	22K	5%	1/16W	R490	1-216-833-11	METAL CHIP	10K	5%	1/16W
R424	1-216-845-11	METAL CHIP	100K	5%	1/16W	R491	1-216-296-00	METAL CHIP	0	5%	1/8W
R425	1-216-849-11	METAL CHIP	220K	5%	1/16W	R492	1-216-864-11	METAL CHIP	0	5%	1/16W
R426	1-216-856-11	METAL CHIP	820K	5%	1/16W	R493	1-216-864-11	METAL CHIP	0	5%	1/16W
R427	1-216-833-11	METAL CHIP	10K	5%	1/16W	< THERMISTOR >					
R428	1-216-833-11	METAL CHIP	10K	5%	1/16W	R073	1-809-358-21	THERMISTOR, NTC (2125)	500		
R429	1-216-821-11	METAL CHIP	1K	5%	1/16W	R113	1-809-358-21	THERMISTOR, NTC (2125)	500		
R430	1-216-851-11	METAL CHIP	330K	5%	1/16W	< NETWORK, RES >					
R431	1-216-841-11	METAL CHIP	47K	5%	1/16W	RB401	1-236-442-11	NETWORK, RES	330K		
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W	RB402	1-236-907-11	NETWORK, RES (CHIP TYPE)	100K		
R433	1-216-821-11	METAL CHIP	1K	5%	1/16W	RB403	1-236-907-11	NETWORK, RES (CHIP TYPE)	100K		
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W	RB404	1-236-908-11	NETWORK, RES (CHIP TYPE)	10K		
R436	1-216-864-11	METAL CHIP	0	5%	1/16W	RB405	1-236-436-11	NETWORK, RES	100K		
R437	1-216-817-11	METAL CHIP	470	5%	1/16W	RB406	1-236-908-11	NETWORK, RES (CHIP TYPE)	10K		
R438	1-216-841-11	METAL CHIP	47K	5%	1/16W	RB407	1-236-907-11	NETWORK, RES (CHIP TYPE)	100K		
R439	1-216-864-11	METAL CHIP	0	5%	1/16W	RB408	1-236-908-11	NETWORK, RES (CHIP TYPE)	10K		
R441	1-216-864-11	METAL CHIP	0	5%	1/16W	RB409	1-236-904-11	NETWORK, RES (CHIP TYPE)	1. 0K		
R442	1-216-864-11	METAL CHIP	0	5%	1/16W	RB410	1-236-412-11	NETWORK, RES	1. 0K		
R443	1-216-845-11	METAL CHIP	100K	5%	1/16W	RB411	1-236-424-11	NETWORK, RES	10K		
R445	1-216-837-11	METAL CHIP	22K	5%	1/16W	RB414	1-236-904-11	NETWORK, RES (CHIP TYPE)	1. 0K		
R447	1-216-864-11	METAL CHIP	0	5%	1/16W	RB416	1-236-412-11	NETWORK, RES	1. 0K		
R448	1-216-809-11	METAL CHIP	100	5%	1/16W	RB418	1-236-408-11	NETWORK, RES	470		
R449	1-216-845-11	METAL CHIP	100K	5%	1/16W						
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W						

VS-95

Ref.No.	Part No.	Description	Remark
RB419	1-236-412-11	NETWORK, RES 1.0K	
RB420	1-236-904-11	NETWORK, RES (CHIP TYPE) 1.0K	
RB421	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
RB422	1-236-424-11	NETWORK, RES 10K	
RB423	1-236-424-11	NETWORK, RES 10K	
RB424	1-236-424-11	NETWORK, RES 10K	
RB425	1-236-424-11	NETWORK, RES 10K	
RB426	1-236-412-11	NETWORK, RES 1.0K	
		(VARIABLE RESISTOR)	
RV151	1-238-087-11	RES, ADJ, CERMET 1K	
		(FLEXIBLE BOARD)	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
		(CRYSTAL)	
X151	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)	
X401	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)	
X402	1-579-049-21	VIBRATOR, CRYSTAL (32kHz)	
X403	1-579-368-31	VIBRATOR, CRYSTAL (11.719MHz)	
X404	1-579-551-11	VIBRATOR, CERAMIC (700kHz)	

		MISCELLANEOUS	

14	1-696-487-11	CABLE, FLAT (FFC-90)	
18	A-7091-800-A	MICROPHONE UNIT	
80	1-692-257-11	SWITCH, PUSH (ZOOM)	
106	1-547-558-21	FILTER BLOCK, OPTICAL	
108	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
401	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
IC875	A-7030-369-A	CCD BLOCK ASSY (AUTO) (ICX055AK-2) (CCD IMAGER)	
H516	1-550-104-32	HOLDER, BATTERY	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
M904	3-708-494-01	METER ASSY, IG (IRIS)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)	
△PS901	1-532-841-21	LINK, IC 1.6A/90V	
△PS902	1-532-841-21	LINK, IC 1.6A/90V	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY)	
S005	1-570-771-21	SWITCH (C DOWN)	
V901	1-452-565-11	CRT ASSY	
△W501	1-540-019-21	SOCKET ASSY, CRT	
W517	1-696-482-11	CABLE, FLAT (FFC-85)	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

Ref. No.	Part No.	Description	Remark

	ACCESSORIES & PACKING MATERIALS		

	A-6768-254-A	RFU ADAPTOR (RFU-90E) (AEP)	
	A-6767-707-A	RFU ADAPTOR (RFU-89EA) (UK)	
	A-6767-706-A	RFU ADAPTOR (RFU-89EA) (E)	
	A-6768-255-A	RFU ADAPTOR (RFU-90AS) (Australian)	
	1-465-927-81	REMOTE COMMANDER (CAM CORDER) (RMT-507)	
	1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE) (UK, E)	
	3-712-673-01	SCREWDRIVER (UK, E)	
	3-738-517-01	BELT (S), SHOULDER	
*	3-754-318-01	INSTRUCTION	
	3-755-493-41	MANUAL, INSTRUCTION (ENGLISH) (AEP, UK)	
	3-755-493-51	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (AEP)	
	3-755-493-61	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN) (AEP)	
	3-755-774-61	MANUAL, INSTRUCTION (ENGLISH) (E, Australian)	
	3-755-774-71	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (E)	
	3-755-774-81	MANUAL, INSTRUCTION (ARABIC) (E)	
	3-755-774-91	MANUAL, INSTRUCTION (CHINESE) (E)	
	3-755-493-71	MANUAL, INSTRUCTION (PORTUGUESE) (AEP)	
	3-755-493-81	MANUAL, INSTRUCTION (DANISH, FINNISH) (AEP)	
	3-756-122-11	INSTRUCTION (CARRYING CASE) (TR303EP)	
	3-941-737-01	BELT, SHOULDER	
	3-943-154-11	HOLDER (B), REMOTE CONTROL	
*	3-949-004-01	CUSHION, ACC (TR303E)	
*	3-949-005-01	CUSHION (LOWER) (TR303E)	
*	3-949-006-11	INDIVIDUAL CARTON (TR303E)	
*	3-950-790-01	CASE, CARRYING, SOFT (TR303EP)	
*	3-950-791-01	CUSHION (FRONT), INNER (TR303EP)	
*	3-950-792-01	CUSHION (REAR), INNER (TR303EP)	
*	3-950-793-01	SPACER (TR303EP)	
*	3-950-794-01	PLATE, INNER (TR303EP)	
*	3-950-795-11	INDIVIDUAL CARTON (TR303EP)	
*	3-952-142-01	BELT, CARRYING (TR303EP)	
*	3-952-143-01	CASE (LOWER) CARRYING, SOFT (TR303EP)	
**	AC-V35	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	
<u>Note</u>			
**	MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.		
***	MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.		

		HARDWARE LIST	

#1	7-627-853-57	PRECISION SCREW +2X5	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

SECTION 7

CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 198.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Stabilized power supply
- Vectorscope
- Adjusting driver
- Color monitor
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part) ^{Note 1}	J-6082-053-B	
J-6	Extension cord (10P, 1 mm)	J-6082-064-A	For extension of JK-91 board
J-7	Extension cord (20P, 0.8 mm)	J-6082-196-A	For extension of CN-65 board (Cabinet (R)) (For the video and the camera section adjustment)
			For extension of AU-138 board (During the repair of AU-138 board)
J-8	Extension cord (16P, 0.8 mm)	J-6082-136-A	For the extension of the lens block (During the repair of the camera section)
J-9	Relay board (21P, 0.5 mm) ^{Note 2}	J-6082-176-A	For the extension of the lens block (During the repair of the camera section)
J-10	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-11	Extension cord (42P, 0.8 mm)	J-6082-195-A	For the extension of DD-48 board (During the repair of the video section)
J-12	Siemens star	J-6080-875-A	For flange back check
J-13	Extension cord (20P, 0.5 mm) ^{Note 2}	J-6082-138-A	For extension between the lens block (FPC) and VC-122 board (CN851) (During the repair of the camera section)
J-14	Extension board (30P, 0.8 mm)	J-6082-167-A	For the extension of VS-95 board (For the mecha deck check)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-122 board (CN851).

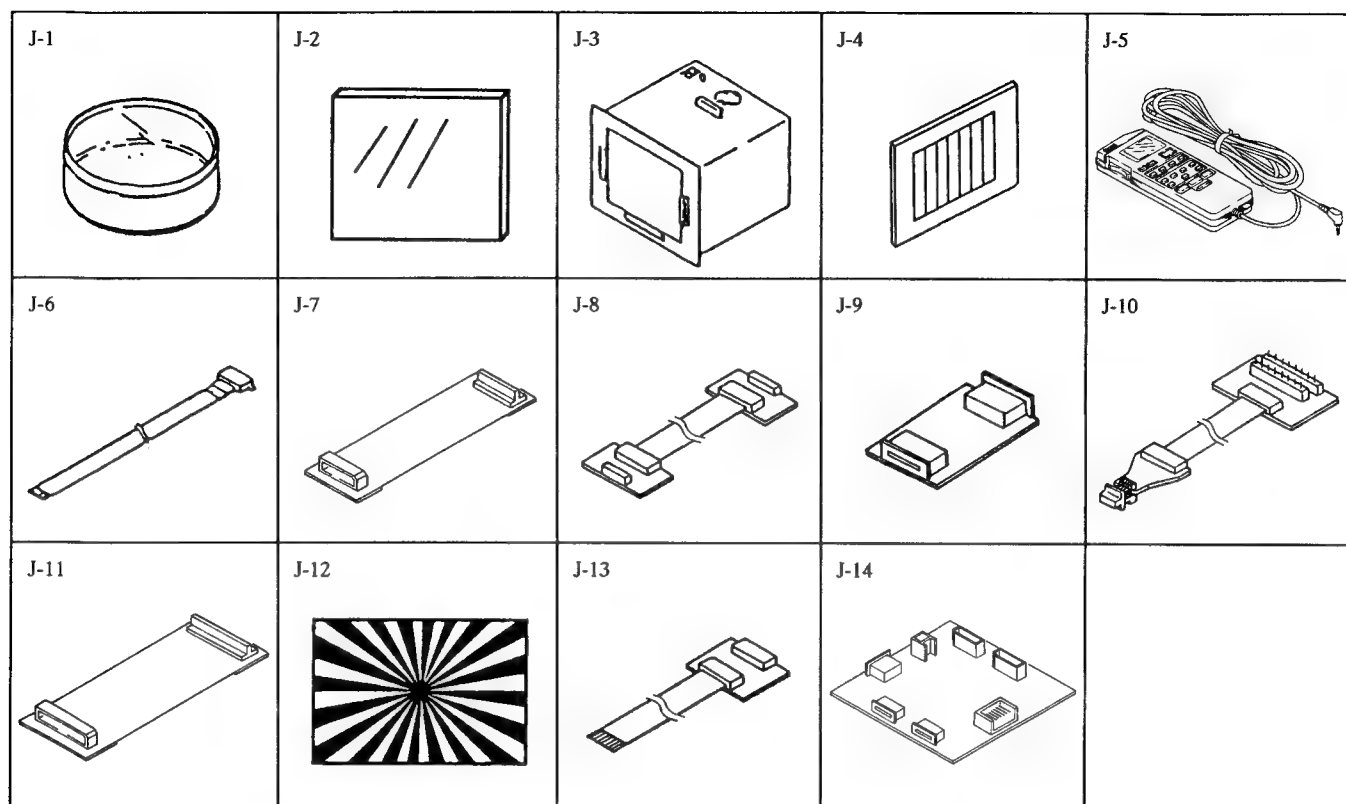


Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "1. Disassembly".

- 1) Connect the equipments for adjustment as shown in Fig. 7-3.
- 2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-95 board CN102.

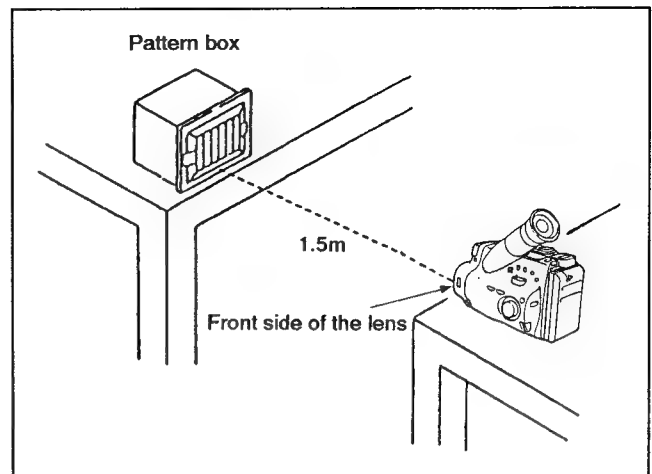


Fig. 7-2.

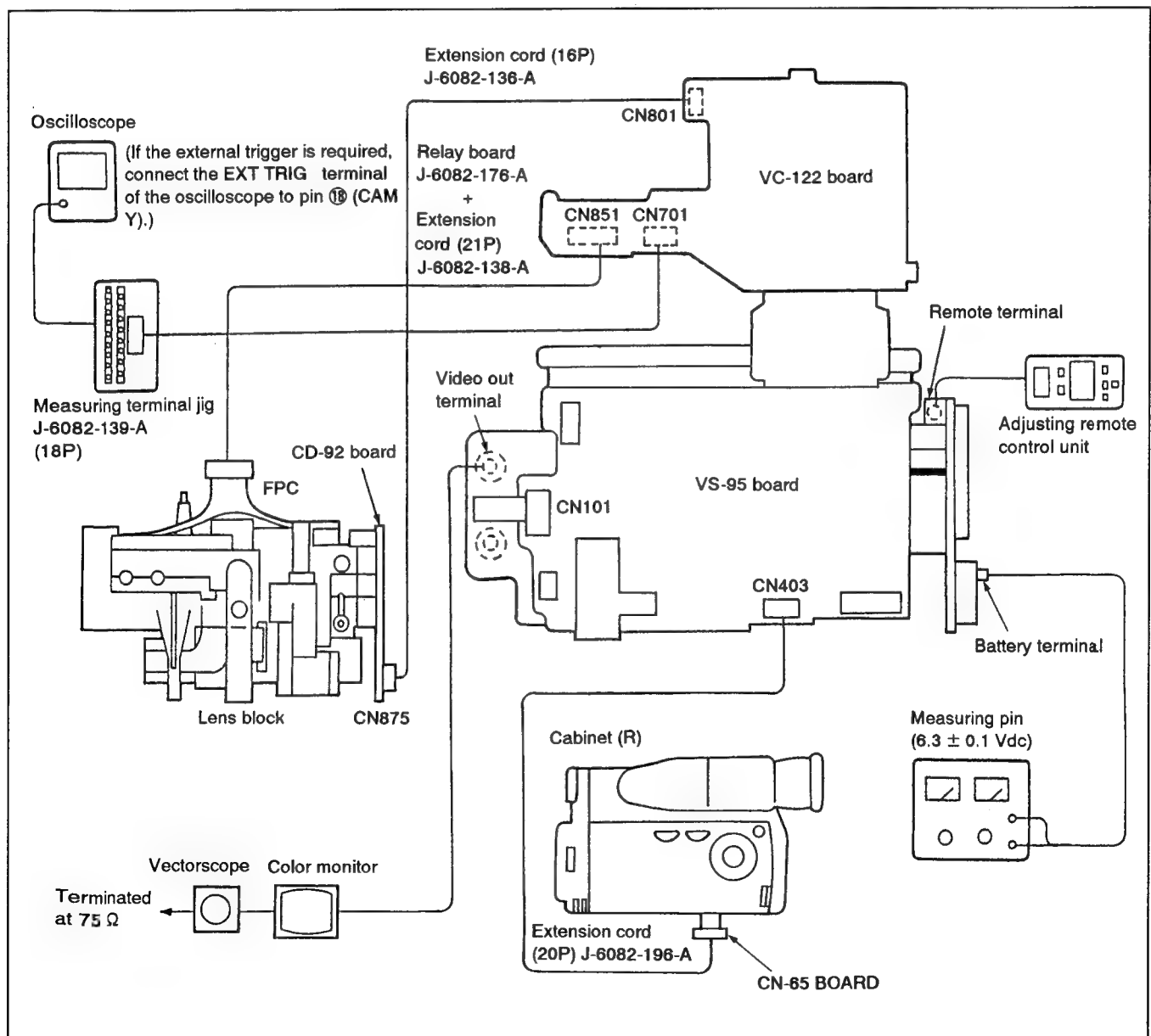


Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (VK-27 board S977).....Camera
2. Standby switch (SW-205 board S519).....Standby
3. LENS OPEN switch (MF-191 board S973)OPEN
4. FOCUS button (MF-191 board S971)MANUAL
5. PROGRAM AE selector (CF-32 board S997)NORMAL

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

- 1) Color bar chart (Standard picture frame)
Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
(Standard picture frame)
- 2) White pattern (Standard picture frame)
Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart
(Standard picture frame).

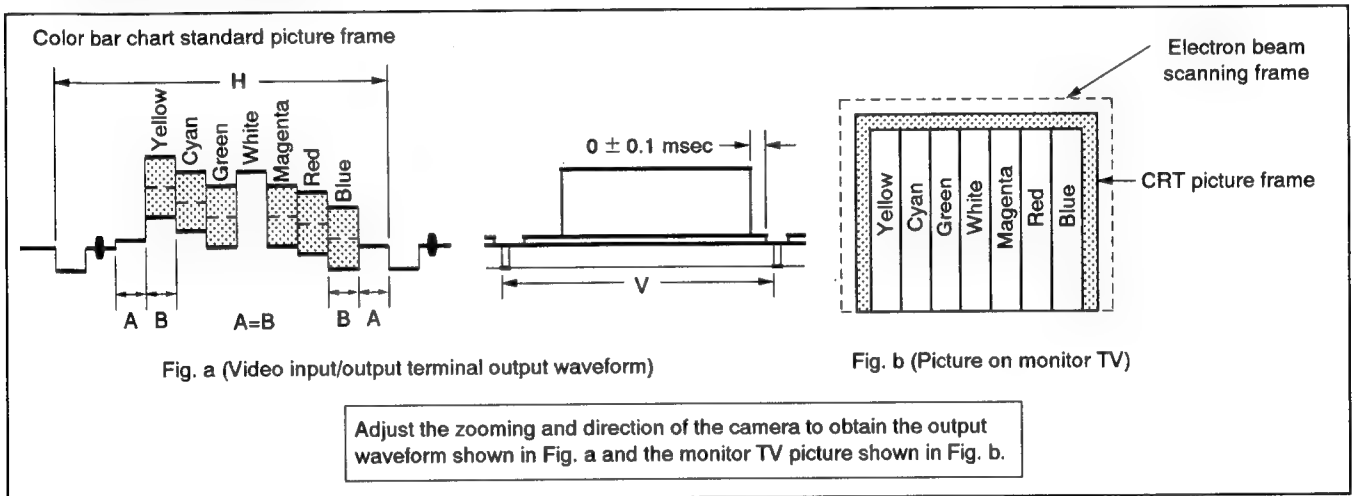


Fig. 7-4.

3) Chart for flange back adjustment

Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

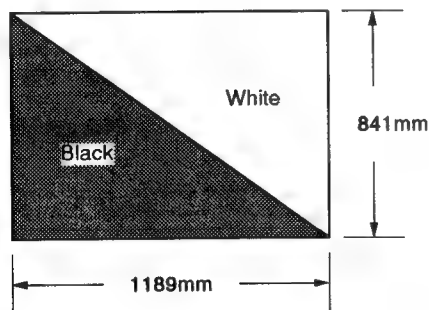


Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-122 board IC702). These processes are carried out by the camera micro processor (VC-122 board IC709). This micro processor reads the data written in the non-volatile memory (VC-122 board IC712), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

- 1) Connect the adjusting remote control unit to the remote terminal (DD-48 board J902).
- 2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

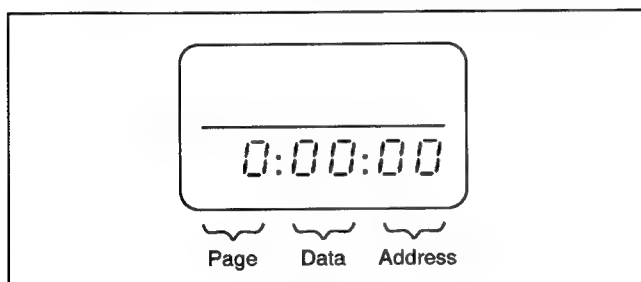


Fig. 7-6.

- 3) Operate the adjusting remote control unit as follows.

- Changing the page

The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH- button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	e	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

- Changing the address

The address will increase when the FF (▶▶) button is pressed, and decrease when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.

- Changing the data (Data setting)

The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.

There are altogether 256 data, from 00 to FF.

- Writing the adjustment data

It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.

(The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)

- 4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
- 5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values after performing "Page F Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data							
			Initial value	Memo column						
00	ID	Set ID	3E	3E						
01	FADER LEVEL	AE REF level modification during fader	E0	E0						
02	FADER ENDTIM	The setting of the AE REF modulation time during fader	10	10						
03	CS SL	Carrier balance adjustment	35							
04	VSUB	CCD imager V SUB adjustment [IC702 ③]	80							
05	VPGH	CCD imager VRG adjustment [IC702 ④]	80							
06	VREF Y	Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤]	7B							
07	VREF C	Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥]	99							
08	HALL GAIN	Hole amplifier gain adjustment [IC702 ⑦]	47	} HALL adjustment						
09	HALL OFFSET	Hole amplifier offset adjustment [IC702 ⑧]	71							
0A	LOWLIGHT CS	Low luminance intensity REF level modulation start setting	C0	C0						
0B	REF 2V	2V standard voltage for hole element [IC702 ⑫]	68	68						
0C	AD REF	Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬]	72							
0D	CORE DETH	CCD correction control	04	04						
0E	CORE VTR DELAY	1HDL longitudinal setting during VTR playback	16	16						
0F	CORE APCN4	Horizontal aperture setting	35	35						
10	CORE APCN5	Vertical aperture setting	3D	3D						
11	CORE EFECT	Special effect control	A0	A0						
12	CORE MATR	BLUE matrix constant	24	24						
13	CORE MATB	RED matrix constant	6C	6C						
14	CORE BURST LEVEL	<div>Burst flag level setting, color modulation ON/OFF<table><tr><td>Data</td><td>Adjustment modeAdjustment</td></tr><tr><td>2E</td><td>Color modulation stopped</td></tr><tr><td>38</td><td>Normal level</td></tr></table></div>	Data	Adjustment modeAdjustment	2E	Color modulation stopped	38	Normal level	38	38
Data	Adjustment modeAdjustment									
2E	Color modulation stopped									
38	Normal level									
15	CORE CHROMA DLY	Y/C delay adjustment	02	02						
16	CORE Y SETUP	Set up level setting	06	06						
17	CORE VHAPCN	Slice and level setting of the aperture signal	17	17						
18	CORE B-Y GAIN	B-Y GAIN	13	} Color reproduction adjustments						
19	CORE R-Y GAIN	R-Y GAIN	11							
1A	CORE R-Y HUE	R-Y HUE	FF							
1B	CORE B-Y HUE	B-Y HUE	FD							
1C	CS/APCCUT	Low luminance intensity aperture and chroma suppress level	22	22						

Table 7-2 (1).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	00	
1E	CCD DEFECT0	CCD correction data	00	
1F	CCD DEFECT1	CCD correction data	00	
20	CCD DEFECT2	CCD correction data	00	
21	CCD DEFECT3	CCD correction data	00	
22	CCD DEFECT4	CCD correction data	00	
23	CCD DEFECT5	CCD correction data	00	
24	CCD DEFECT6	CCD correction data	00	
25	CCD DEFECT7	CCD correction data	00	
26	CCD DEFECT8	CCD correction data	00	
27	CCD DEFECT9	CCD correction data	00	
28	CCD DEFECT10	CCD correction data	00	
29	CCD DEFECT11	CCD correction data	00	
2A	CCD DEFECT12	CCD correction data	00	
2B	CCD DEFECT13	CCD correction data	00	
2C	CCD DEFECT14	CCD correction data	00	
2D	RREF L	3200k Red standard data LSB	72	
2E	RREF H	3200k Red standard data MSB	5F	
2F	GREF L	3200k Green standard data LSB	D4	
30	GREF H	3200k Green standard data MSB	63	
31	BREF L	3200k Blue standard data LSB	3B	
32	BREF H	3200k Blue standard data MSB	2C	
33	RCONTREF	3200k RCONT adjustment value	42	
34	BCONTREF	3200k BCONT adjustment value	4A	
35	AWB NOWM R	Red regular correction coefficient	7E	
36	AWB NORM B	Blue regular correction coefficient	96	
37	AWB SHUT IN	Indoor determination shutter data	A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data	A0	A0
39	AWB IRIS IN	Indoor determination hole data	79	
3A	AWB IRIS OUT	Outdoor determination hole data	7F	
3B	AWB G LEVEL	High luminance section green integral level	02	02
3C	AWB G WIDTH	High luminance section green integral level range	03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient	00	
3F	AWB SELECT	AWB mode selection	00	00
40	AWB DIFF	Standard difference from the outdoor fixed value	0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient	48	48
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient	78	78
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient	60	60
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient	40	40
45	AWB TOP SLP R	AWB incoming frame top R coefficient	66	66
46	AWB TOP SLP B	AWB incoming frame top B coefficient	18	18

Table 7-2 (2).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data									
			Initial value	Memo column								
47	AWB KEIKO R	AWB incoming frame fluorescent light R coefficient	66	66								
48	AWB KEIKO B	AWB incoming frame fluorescent light B coefficient	18	18								
49	AWB BOTTOM UP	AWB incoming frame bottom upper value	C2	C2								
4A	AWB BOTTOM DWN	AWB incoming frame bottom lower value	8C	8C								
4B	AWB MIDDLE UP	AWB incoming frame middle upper value	AD	AD								
4C	AWB MIDDLE DWN	AWB incoming frame middle lower value	96	96								
4D	AWB TOP UP	AWB incoming frame top upper value	78	78								
4E	AWB TOP DWN	AWB incoming frame top lower value	60	60								
4F	AWB KEIKO	AWB incoming frame fluorescent light output lower value	66	66								
50	AWB KEIKO DWN	AWB incoming frame fluorescent light lower value	59	59								
51	AWB R TOP LMT	AWB incoming frame Rcont upper value	6E	6E								
52	AWB R DWN LMT	AWB incoming frame Rcont lower value	20	20								
53	AWB B TOP LMT	AWB incoming frame Bcont upper value	83	83								
54	AWB B IN TOP	AWB incoming frame Bcont	67	67								
55	AWB B IN MAX	AWB incoming frame Bcont	5C	5C								
56	AWB B OUT MIN	AWB incoming frame Bcont	5C	5C								
57	AWB B OUT DWN	AWB incoming frame Bcont	4A	4A								
58	AWB B DWN LMT	AWB incoming frame Bcont lower value	1B	1B								
59	AWB LL LMT	Low luminance intensity limiter	06	06								
5A	AWB T M DIVID	AWB incoming frame upper, middle border value	5E	5E								
5B	AWB B M DIVID	AWB incoming frame middle, lower border value	39	39								
5C	AWB DELAY TM	AWB tracking speed <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>01</td><td>High speed tracking mode</td></tr><tr><td>0C</td><td>Normal</td></tr></table>	Data	Adjustment mode	01	High speed tracking mode	0C	Normal	0C	0C		
Data	Adjustment mode											
01	High speed tracking mode											
0C	Normal											
5D	AWB FAST TM	AWB initial high speed tracking amount	40	40								
5E	AWB OUT HYS OFF	AWB outdoor hysteresis off difference	0C	0C								
5F	AWB OUT B HYS	AWB outdoor hysteresis amount	06	06								
60	AWB MODE	AWB adjustment mode <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment mode</td></tr><tr><td>F1</td><td>All area tracking mode</td></tr></table>	Data	Adjustment mode	00	Normal	D0	AWB adjustment mode	F1	All area tracking mode	00	00
Data	Adjustment mode											
00	Normal											
D0	AWB adjustment mode											
F1	All area tracking mode											
61	AE REFL	Reference value (lower) for AE	00	00								
62	AE REFH	Reference value (upper) for AE	1E	1E								
63	AGC MIN	AGC MIN value (AGCREF value), IRIS level adjustment	E3									
64	AE MIML	Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment	32									
65	AE MAXL	High luminance intensity side limiter (lower)	80	80								
66	IRIS OFFSET	Iris ROM table OPEN side off set	D0	D0								
67	AE KEISU	Correction coefficient during detection weighting	00	00								
68	AE FUNCTION	SW for turning each AE function ON and OFF	02	02								

Table 7-2 (3).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response DOWN side	28	28
6B	JITEISU UP	Constant during loop response UP side	0D	0D
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYAKOU JITEISU	Constant during auto back light response	08	08
76	SABUN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	A0	A0
78	FUZZY RULE2	Correction amount 2 for auto back light	D0	D0
79	FUZZY RULE3	Correction amount 3 for auto back light	E0	E0
7A	FUZZY RULE4	Correction amount 4 for auto back light	B0	B0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	90	90
7D	FUZZY RULE7	Correction amount 7 for auto back light	B0	B0
7E	FUZZY RULE8	Correction amount 8 for auto back light	B8	B8
7F	FUZZY RULE9	Correction amount 9 for auto back light	98	98
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Iris limit value (lower)	42	42
82	IRIS MIN H	Iris limit value (upper)	02	02
83	DELTA SHUT GAIN	Shutter smoothing value setting	04	04
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower)	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE LIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	90	
8B	STEP ZERO SPAN	Flange back value 2	A0	
8C	ZOOM SPD FAST	Zoom speed (fast)	73	73
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	6A	6A
8E	ZS INIT SLOW	Zoom speed initial value (slow)	6A	6A
8F	ZS INIT FAST	Zoom speed initial value (fast)	6A	6A
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11
92	ZS L	Zoom servo coefficient L	04	04

Table 7-2 (4).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data																	
			Initial value	Memo column																
93	ZP HYS	Zoom potential hysteresis	03	03																
94	ZOOM SPD SLOW	Zoom speed (slow)	29	29																
95	AF MD2THL	MODE2 THR	20	20																
96	MAXCHG THR	MAX value renewal THR	1A	1A																
97	ERR THRL	Wobbling width THR	18	18																
98	WOB INTV	Wobbling second interval	04	04																
99	ERRPOL THR	MODE2 error possible THR	13	13																
9A	MAXCHK THR	MAX CHECK THR	12	12																
9B	REWOB THR	Wobbling second THR	0A	0A																
9C	MODE2 INOUT	MODE2 speed switchover	8B	8B																
9D	SMLWD THR	Small frame THR	0A	0A																
9E	ZOOM PULSE LIMIT	Maximum zoom pulse value	EE	EE																
9F	ZOOM RIZE	Zoom rise minimum speed time	0A	0A																
A0	FB CURVEPEAKL	Constant for flange back adjustment	F5	F5																
A1	FB CURVEPEAKH	Constant for flange back adjustment	0B	0B																
A2	FB ZOOMSL	Constant for flange back adjustment	02	02																
A3	FB ZOOMSH	Constant for flange back adjustment	07	07																
A4	LIMITREST WIDE	Zoom limiter WIDE side	14	14																
A5	LIMITREST TELE	Zoom limiter TELE side	17	17																
A6	FB PEAKTHR	Constant for flange back adjustment	FF	FF																
A7	FB ZOOM SLOW	Constant for flange back adjustment	1C	1C																
A8	DET IRIS ALT	Iris variation check THR	02	02																
A9	DET AGC ALT	AGC variation check THR	02	02																
AA	LIMIT INSURANCE	Focus limiter insurance value	02	02																
AB	FOCUS MODE	Focus mode <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>08</td><td>Zoom, Focus fixed</td></tr><tr><td>00</td><td>Normal</td></tr></table>	Data	Adjustment mode	08	Zoom, Focus fixed	00	Normal	00	00										
Data	Adjustment mode																			
08	Zoom, Focus fixed																			
00	Normal																			
AC	LENS ADJ MODE	Flange back adjustment mode <table><tr><td>Data</td><td>Adjustment mode</td></tr><tr><td>00</td><td>Nomal</td></tr><tr><td>01</td><td>Flange back adjustment</td></tr></table>	Data	Adjustment mode	00	Nomal	01	Flange back adjustment	00	00										
Data	Adjustment mode																			
00	Nomal																			
01	Flange back adjustment																			
AD	LENS EMRG	Lens emergency	00	00																
AE	NTSC PAL/H DEF DELAY	DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay	21	21																
AF	FT SW	DDS display mode switchover <table><tr><td>Data</td><td>DDS display mode</td></tr><tr><td>00</td><td>Y sampling display</td></tr><tr><td>02</td><td>R-Y display</td></tr><tr><td>40</td><td>HALL data display</td></tr><tr><td>82</td><td>R ratio display</td></tr><tr><td>83</td><td>B ratio display</td></tr><tr><td>91</td><td>R, B ratio (M) display</td></tr><tr><td>B0</td><td>Focus step display</td></tr></table>	Data	DDS display mode	00	Y sampling display	02	R-Y display	40	HALL data display	82	R ratio display	83	B ratio display	91	R, B ratio (M) display	B0	Focus step display	00	00
Data	DDS display mode																			
00	Y sampling display																			
02	R-Y display																			
40	HALL data display																			
82	R ratio display																			
83	B ratio display																			
91	R, B ratio (M) display																			
B0	Focus step display																			

Table 7-2 (5).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	CORE MODE DATA 13 byte	10	10
B1	CORE Y GAIN	CORE FIELD DATA 0 byte	3A	3A
B2	E LOW LIGHT START	Low light chroma suppress start point	30	30
B3				
B4	YAKEI LEVEL	YAKEI mode gain setting value	40	40
B5				
B6	ZOOM DROP 1	F-No. dropping (1) by Zoom lens	60	60
B7	ZOOM DROP 2	F-No. dropping (2) by Zoom lens	75	75
B8				
B9				
BA	AWB IN B HYS	Hysteresis of AWB indoor BLUE	04	04
BB	AWB IN R HYS	Hysteresis of AWB indoor RED	02	02
BC	AWB KAKE NORM R	ADD: 35 NORM R × 1000H	20	20
BD	AWB KAKE NORM B	ADD: 36 NORM B × 1000H	20	20
BE	MF STEP CHNGE	Coefficient of MODE 2 THR	46	46
BF	MD2 LOWCON SPD	Speed for Low-contrast at MODE 2	07	07
C0	MAX CHECK NG CNT	MAX CHECK NG count	14	14
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	Low light AE fluctuation THR 1	28	28
C3	AE Y MIN	Low light AE fluctuation THR 2	20	20
C4	MD2 SPD	Focus speed at MODE 2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOW CON THR	THR 1 for judging Low-contrast at MODE 2	10	10
C7	LOW CON THR2	THR 2 for judging Low-contrast at MODE 2	20	20
C8-EF		Not used		
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (6).

7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned.

Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01 10 11	Camera adjustment mode (1), F page write protect released Normal Camera adjustment mode (2), F page write protect released
01	Camera adjustment switch Note: To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00 01 03 05 07 09 0B 0D 0F 11 13 15 17 1D	Normal IRIS OPEN, AGC HOLD IRIS CLOSE1, AGC HOLD IRIS CLOSE2, AGC MIN IRIS CLOSE3, AGC MAX ND0.5 SHUTTER (PAL=1/160, NTSC=1/190) ND0.8 SHUTTER (PAL=1/320, NTSC=1/380) AWB PRESET1: 3200K PRESET DATA take in WB 3200K PRESET: Indoor white balance mode AWB PRESET2: Preparation of 3200K PRESET DATA take in ZOOM HUNTING1 ZOOM SPDSLOW ZOOM HUNTING2 ZOOM SPDFAST AE FB adjustment mode (IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL)) EEPROM PRE WRITE: Page F initial data write
05	Shutter mode	00 19	NTSC=1/60, PAL=1/50 1/2000
06	FOCUS limiter ON/OFF	00 01	FOCUS limiter ON (Normal) FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00 01	ZOOM limiter ON (Normal) ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00 01 02 03	Normal ZOOM speed SLOW ZOOM speed FAST ZOOM speed SUPER SLOW
09 ★	COMPLETED FLAG	00 01	Camera Adjustment not completed Camera adjustment completed
11 ★	ROM VERSION	01 02 03	Camera micro processor ver1 Camera micro processor ver2 Camera micro processor ver3
0C ★	LENS INITIAL END	00 01	During the initial operation of the lens Lens initial operation completed

Addresses with ★ are exclusively for reading.

Table 7-3.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 7-4.

7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-122 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	NC	4	CAM SI
5	NC	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	NC	18	CAM Y

Table 7-5.

7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: () indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection “189” of the ① and ② in the above table is the decimal notation to be calculated.

Note: () indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).

As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-48 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑤ and ⑧ of CN901
Specified value	4.92 ± 0.15 Vdc
D4V check	
Measurement point	Pin ④ of CN901
Specified value	3.98 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pins ⑦ and ⑩ of CN901
Specified value	$4.86 \begin{smallmatrix} +0.15 \\ -0.11 \end{smallmatrix}$ Vdc
CAM 15V check	
Measurement point	Pin ⑫ of CN901
Specified value	15.05 ± 0.4 Vdc
CAM -9V check	
Measurement point	Pin ⑨ of CN901
Specified value	-8.5 ± 0.4 Vdc

Checking method:

- 1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

- 1) Check that the data of page: 6, address: 09 is 00.
(Display indicating that page F data can be initialized)
- 2) Check that the data of page: 6, address: 01 is 00.
- 3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Page F data initialization execution.
(The data of all addresses of page F will be initialized.)
- 4) Check that the data of page: 6, address: 09 is 01.
(Displays that the initialization of page F data has been completed)
- 5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
(Releases the page F data initialization mode)
- 6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Address	Data
00 (ID)	3E
0A (LOW LIGHT CS)	C0
11 (CORE EFFECT)	A0
12 (CORE MAT R)	24
14 (CORE BURST LEVEL)	38
15 (CORE CHROMA DLY)	02
17 (CORE VHAPCN)	17
5C (AWB DELAY TM)	0C
68 (AE FUNCTION)	02
6A (JITEISU DOWN)	28
6B (JITEISU UP)	0D
8C (ZOOM SPD FAST)	73
8D (ZOOM SPD SUPER)	6A
8E (ZS INIT SLOW)	6A
8F (ZS INIT FAST)	6A
94 (ZOOM SPD SLOW)	29
9E (ZOOM PULSE UNIT)	EE
A2 (FB ZOOM SL)	02
A3 (FB ZOOM SH)	07
AE (NTSC PAL/H DEF DELAY)	21
B0 (CORE OTHER)	10
B1 (CORE Y GAIN)	3A
B2 (E LOW LIGHT START)	30
C0 (MAX CHK NGCNT)	14

[Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.2	CXP80624-424R	02
Ver.3	CXP80624-434R	03

4. 28 MHz Original Oscillation Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑩ of IC706 (14 MHz)
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14187500 \pm 71 Hz

Adjusting method:

- 1) Use CT801 to adjust the oscillation frequency to 14187500 \pm 71 Hz.

5. V SUB Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) \pm 0.1 Vdc

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) \pm 0.1 Vdc.
- 3) Press the PAUSE button of the adjusting remote control unit.

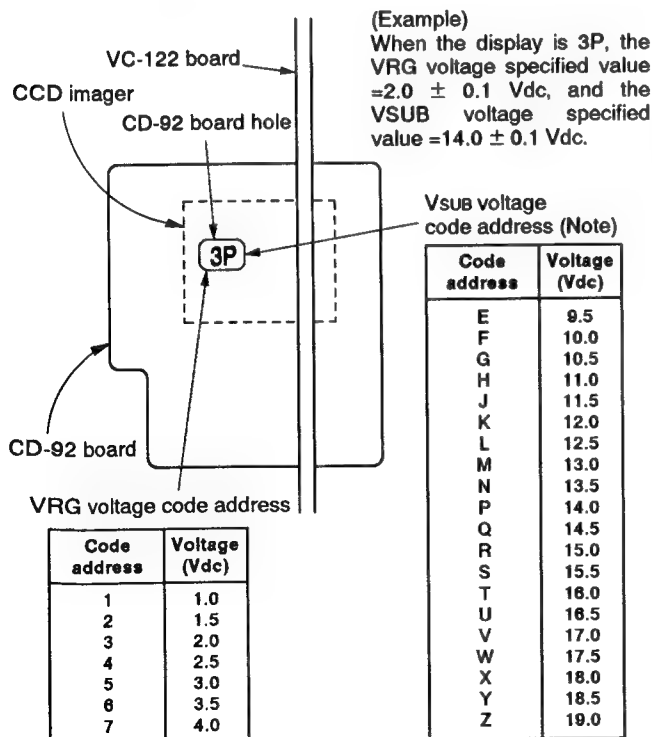


Fig. 7-7.

Note: This VSUB voltage code address can not be used for other models.

6. VRG Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) \pm 0.1 Vdc

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) \pm 0.1 Vdc.
- 3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The occasion of exchanging a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of VC-122 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Write the correction data to page: F, addresses: 1D to 2C.
Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments

- 1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of VC-122 board.

8. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(HALL output display mode setting)
- 3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)
- 4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
- 5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to W₂.
- 6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
- 7) Read the DDS display data, and set to W₁.
- 8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS OPEN mode setting)
- 9) Read the DDS display data, and set to K₁.
- 10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
- 11) Read the DDS display data, and set to K₂.
- 12) Convert W₁, W₂, K₁, K₂ to decimal notation, and obtain W₁', W₂', K₁', K₂'. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
- 13) Calculate X₁' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \dots \dots \dots \text{Equation 1}$$

$$B' = W_1' - K_1' \dots \dots \dots \text{Equation 2}$$

$$X_1' = \frac{2048 + (48 \times A') - (16 \times B')}{A'} \dots \dots \dots \text{Equation 3}$$
- 14) Convert X₁' to hexadecimal notation, and obtain X₁.
(Round off to one decimal place)
- 15) Set data: X₁ to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
- 16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
- 17) Press the PAUSE button of the adjusting remote control unit.
- 18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)

- 19) Read the DDS display data, and set to W₀. If W₀ lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.

- 20) Convert W₀ to hexadecimal notation, and obtain W₀'.

- 21) Calculate X₂' using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 51 \dots \dots \dots \text{Equation 4}$$

$$X_2' = \frac{(128 - B') \times (X_1' - 48) + 48 \times C'}{C'} \dots \dots \dots \text{Equation 5}$$

(X₁' and B' are values obtained from equations 2 and 3)

- 22) Convert X₂' to hexadecimal notation and obtain X₂.

(Round off to one decimal place)

- 23) Set data X₂ to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.

- 24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".

- 25) Press the PAUSE button of the adjusting remote control unit.

- 26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS OPEN mode setting)

- 27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS NORMAL mode setting)

9. Flange Back Adjustment

Subject	Chart for flange back adjustment (1998 ± 5mm from the front side of) (the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

- 1) Turn the auto focus off.
- 2) Adjust the focus using the focus knob.
- 3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
- 4) Release the protect.
Page: 6, address: 00, data: 01
- 5) Check that the data of page: 6, address: 09 is 00.
(Flange back adjustment possible display)
- 6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
- 7) Set data: 01 to page: F, address: AC.
(This causes automatic adjustment to be performed.)
(Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
- 8) Check that the data of page: 6, address: 09 is 01.
(Display indicating flange back adjustment completion)

Processing after completing adjustments

- 1) Set data: 00 to page: F, address: AC.
- 2) Turn off the main power supply (6.3V).

10. Flange Back Check

Subject	Siemens star (2m (or 1.4m) from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	$D2=D1 \pm 5$

Checking method:

- 1) Set data: 01 to page: 6, address: 00. (Camera adjustment mode)
- 2) Set data: B0 to page: F, address: AF. (Focus step display mode)
- 3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
- 4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image displayed on the monitor TV screen.
- 5) Turn off the auto-focus.
- 6) Shoot the Siemens star with the zoom TELE end.
- 7) Rotate the focus ring, and adjust the focus.
- 8) Adjust to the zoom WIDE end.
- 9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as D1.
- 10) Rotate the focus ring, and adjust the focus.
Read the focus step value here, and take the value as D2.
- 11) Check that $D2=D1 \pm 5$.

Process after checking

- 1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

11. SYNC Level Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	$A=150 \pm 5 \text{ mV}$

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)
- 3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of IRIS CLOSE mode)

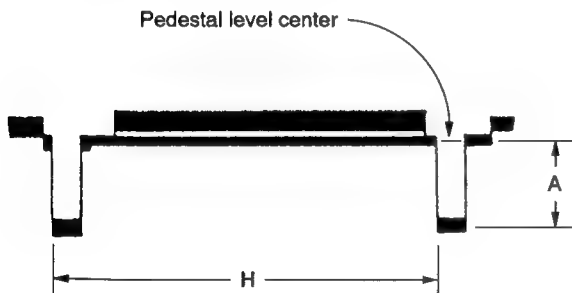


Fig. 7-8.

12. BURST Level Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	$A=150 \pm 5 \text{ mVp-p}$

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE mode setting)
- 3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of IRIS CLOSE mode)

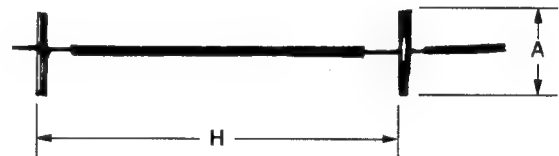


Fig. 7-9.

13. A/D Offset Adjustment

Subject	Not required
Measurement Point	DDS display on the EVF or the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	46 to 47

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE AGC MIN mode setting)
- 3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(Y sampling output mode setting)
- 4) Set data: 35 to page: 1, address: E6.
(Setting 1 of the sampling position)
- 5) Set data: 6D to page: 1, address: E7.
(Setting 2 of the sampling position)
- 6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
(Set the data of address 0C to the maximum value)
(satisfying the specification.)
- 7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Turn the main power supply (6.3V) off.

14. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01.
- 2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS CLOSE, AGC MAX mode setting)
- 3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(IRIS NORMAL mode setting)

The center of the black luminance point should be within this circle

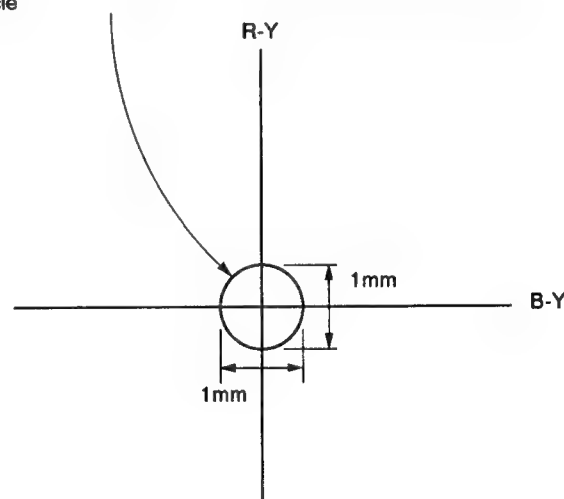


Fig. 7-10.

15. Picture Frame Setting

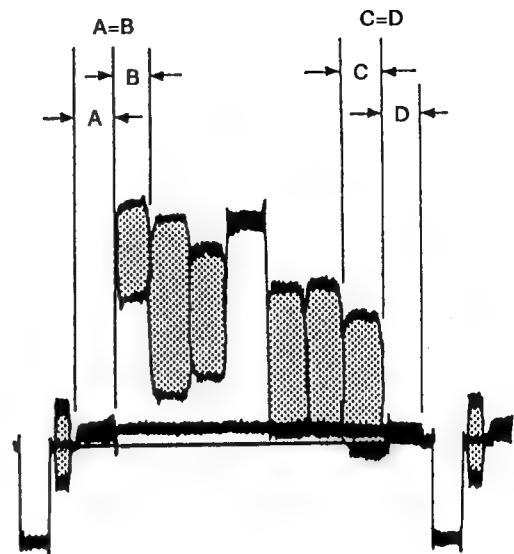
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	$A=B, C=D, t=0 \pm 0.1 \text{ msec}$

Setting method:

- 1) Turn the auto focus off.
- 2) Adjust the focus using the focus knob.
- 3) Adjust the zoom and the camera direction, and set to the specified position.
- 4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

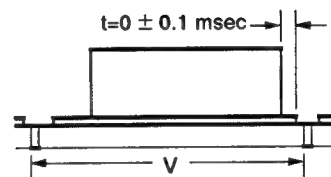


Fig. 7-11.

Check on the TV monitor

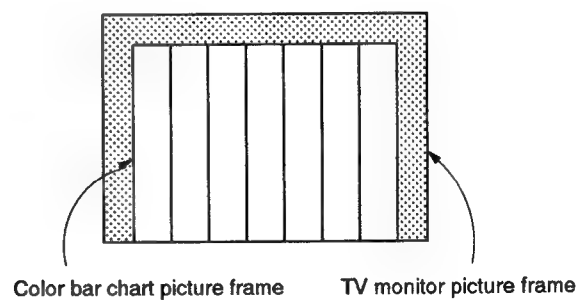


Fig. 7-12.

16. IRIS Level Adjustment (VC-122 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	$A=200 \pm 5 \text{ mV}$

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

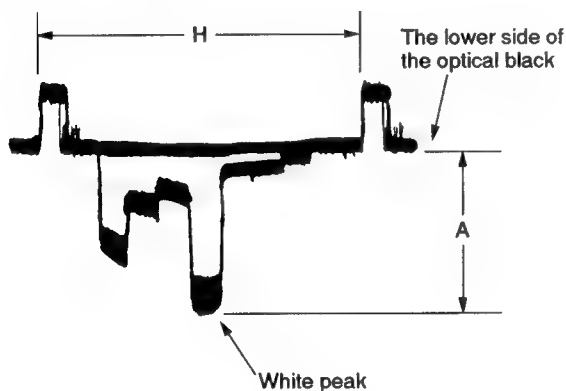


Fig. 7-13.

17. MAX GAIN Adjustment (VC-122 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑪ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	$A=200 \pm 5 \text{ mV}$

Adjusting method:

- 1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
- 2) Release the protect.
Page: 6, address: 00, data: 01
- 2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

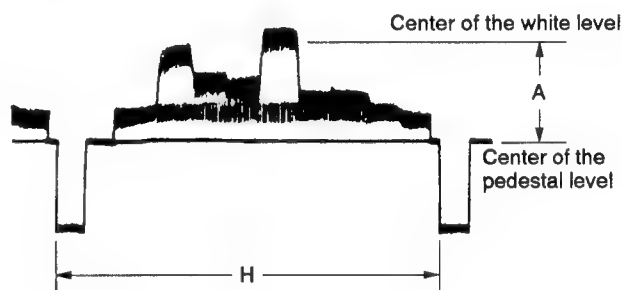


Fig. 7-14.

18. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

- 1) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
- 2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(HALL data display)
- 3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(ND0.8 shutter mode setting)
- 4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
- 5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
- 6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(ND0.5 shutter mode setting)
- 7) Read the DDS display data and set to D3A.
- 8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the ND0.5 shutter mode)

19. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point

Adjusting method:

- 1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(WB 3200K preset mode setting)
- 2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
- 3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
If not, the new data will not written to the memory.
- 4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the preset mode)
- 2) Set data: 10 to page: 6, address: 00.
(Protect mode setting)

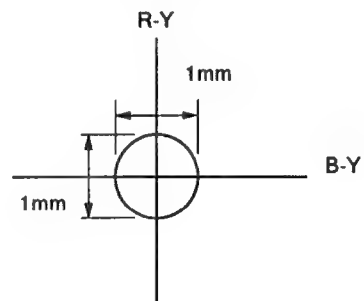


Fig. 7-15.

20. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B-Y GAIN), 19 (CORE R-Y GAIN), 1A (CORE R-Y HUE), 1B (CORE B-Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

- 1) Release the protect.
Page: 6, address: 00, data: 01
 - 2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
 - 3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
 - 4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
- Note:** Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
If not, the new data will not be written to the memory.
- 5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
(Release of the adjustment mode)
- 2) Set data: 10 to page: 6, address: 00.
(Protect mode setting)

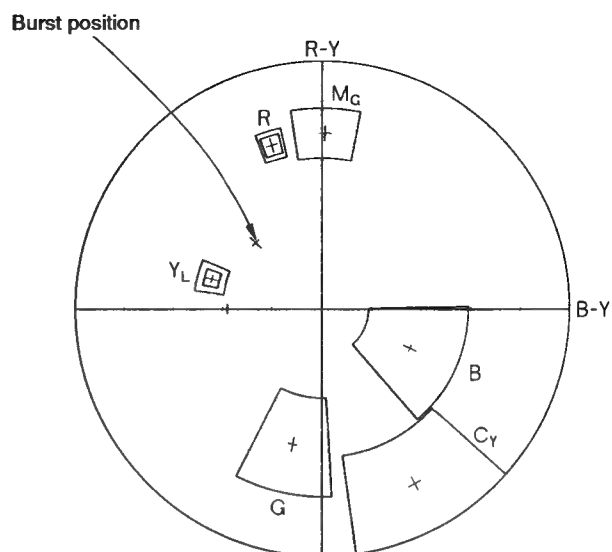


Fig. 7-16.

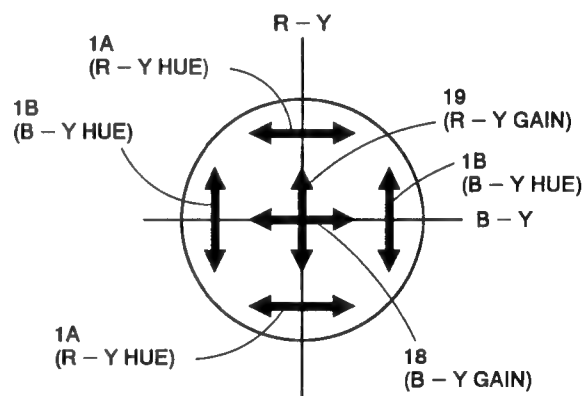


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

21. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 30 (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

- 1) Turn the power of the unit OFF/ON.
- 2) Check that the data of page: 6, address: 09 is 00.
(Auto white balance preset adjustment possible display)
- 3) Set data: 11 to page: 6, address: 00, and wait at least 2 seconds.
(Camera adjustment mode 2 setting)
- 5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(3200K preset data take in preparation mode)
- 6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
- 7) Check that the data of page: 6, address: 09 is 01.
(Auto white balance preset adjustment completion display)

Processing after completing adjustments

- 1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance preset mode)
- 2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)

22. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2980 ± 40 B ratio $5D80 \pm 40$

Note: Check that "Auto White Balance Preset Adjustment" have been completed.

Adjusting method:

- 1) Place the C14 filter for color temperature correction on the lens.
- 2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
- 3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance adjustment mode setting)
- 4) Set data: 82 to page: F, address: AF.
(R ratio display mode setting)
- 5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2980 ± 40 .
- 6) Press the PAUSE button of the adjusting remote control unit.
- 7) Set data: 83 to page: F, address: AF.
(B ratio display mode setting)
- 8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to $5D80 \pm 40$.
- 9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Release of the white balance adjustment mode)
- 2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)

23. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-18. A to C

Checking method:

- 1) Check that the lens is not covered with either filter.
- 2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
- 3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
- 4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
(Indoor white balance check)
- 5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance mode setting)
- 6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance high speed tracking mode setting)
- 7) Set data: 91 to page: F, address: AF (R, B ratio (M) display mode setting), and check that the top 2 digits and bottom 2 digits of the DDS display are 3D to 43. Or check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
- 8) Place the C14 filter on the lens.
- 9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
(Auto white balance outdoor mode check)
- 10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
- 11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
(Auto white balance outdoor mode check)

Processing after completing adjustments

- 1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance fast tracking mode)
- 2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)
- 3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

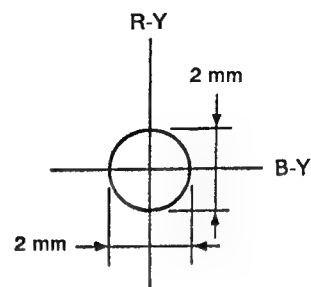


Fig. 7-18. A

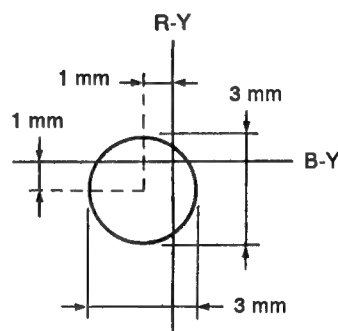


Fig. 7-18. B

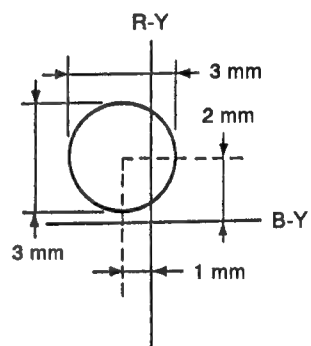


Fig. 7-18. C

24. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position that was set in the color bar chart picture frame "15. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

- 1) Remove the filter C14 for color temperature correction.
- 2) Release the protect.
Page: 6, address: 00, data: 01
- 3) Color bar data sampling mode setting
 1. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
 2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
(Check that the colors on the monitor display at the color modulation stop mode have disappeared)
- 4) Specifying the Yellow position
 1. Set data: C9 to page: 1, address: E6.
 2. Set data: B6 to page: 1, address: E7.
- 5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(R-Y data display mode setting)
- 6) Read the average value of the DDS display data (Note 2), and set to Y1.
- 7) Specifying the Red position
 1. Set data: 59 to page: 1, address: E6.
 2. Set data: 6D to page: 1, address: E7.
- 8) Select page: F and read the average value of the DDS display data (Note 2), and set to R1.
- 9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
- 10) Specifying the yellow position.
 1. Set data: C9 to page: 1, address: E6.
 2. Set data: B6 to page: 1, address: E7.
- 11) Select page: F and read the average value of the DDS display data (Note 2), and set to Y2.
- 12) Specifying the Red position
 1. Set data: 59 to page: 1, address: E6.
 2. Set data: 6D to page: 1, address: E7.
- 13) Select page: F and read the average value of the DDS display data (Note 2), and set to R2.

- 14) Convert Y1, R1, Y2, R2 to decimal notation to obtain Y1', R1', Y2' and R2'.

(Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")

- 15) Calculate X1' from the following equation (decimal notation calculation).

$$X1' = Y2' - Y1'$$

- 16) Calculate D3D from the following table
(D3D is hexadecimal notation)

X1' value	D3D
$-1 \leq X1' \leq 1$	F0
$X1' > 1$	F1
$X1' < -1$	FF

- 17) Set data: D3D to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.

- 18) Calculate X2' from the following equation (decimal notation calculation).

$$X2' = R2' - R1'$$

- 19) Calculate D3E from the following table.

X2' value	D3E
$X2' \geq 0$	00
$0 > X2' \geq -1$	01
$-1 > X2'$	02

- 20) Set data: D3E to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

- 1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
(Release of the sampling mode)
- 2) Set data: 38 to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
(Color modulation ON mode setting)
- 3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
(Release of the R-Y data display mode)
- 4) Turn the main power supply (6.3V) off.

Note 2: As the R-Y data and B-Y data are displayed alternatively, it will be difficult to read the R-Y data. Record this data on a tape, and perform frame advancing playback so that only the R-Y data is read.
(Example)

If the frame advancing playback is performed, the following will be displayed.

81 → 7A → 82 → 7A → 80 → 7A → 81 → 7C → 81 → 79

As the R-Y data is above 80, and the B-Y data is below 7F, the data which is underlined is the R-Y data. If the average value is calculated, the R-Y data will become 81.

25. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=680 \pm 40 mV SYNC level=300 \pm 20 mV BURST level=300 \pm 30 mVp-p

Checking method:

- 1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

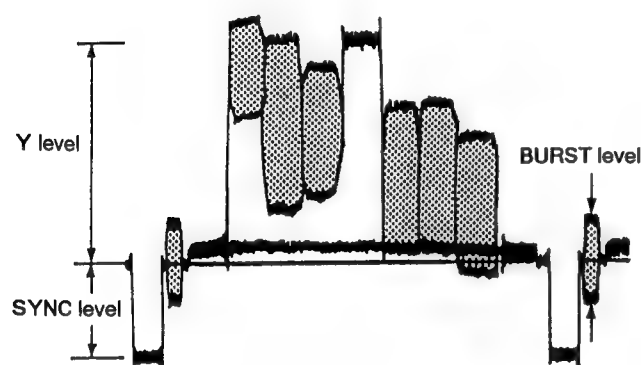


Fig. 7-19.

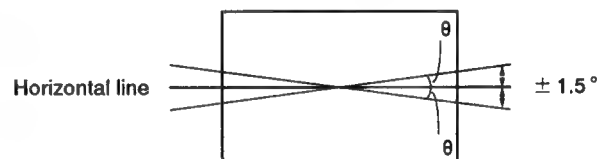
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-21.

Adjusting method:

- 1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
- 2) Loosen the DY (deflection yoke) tightening nut.
- 3) Rotate DY, and adjust the image so that it is horizontal.
- 4) Tighten the DY tightening nut.
(Do not tighten it too tightly.)



Specified value: The image should be within $\pm 1.5^\circ$ of the horizontal line.

Fig. 7-21.

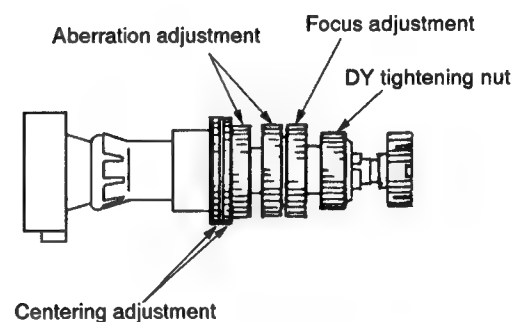


Fig. 7-22.

7-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-23.

Adjusting method:

- 1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)

Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

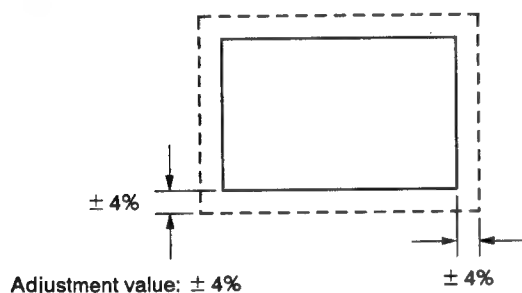


Fig. 7-23.

7-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

- 1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

7-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 7-24.

Adjusting method:

- 1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
- 2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

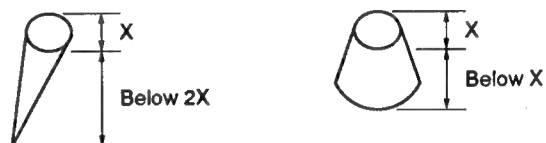


Fig. 7-24.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

- 1) Adjust to 2.60 ± 0.05 Vdc using RV501.

7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C504
Specified Value	$6 \pm 2\%$

Adjusting method:

- 1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
- 2) Rotate RV504 so that the brightness is the normal level.
- 3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes $6 \pm 2\%$ (Left and right totals). (Refer to Fig. 7-26.)

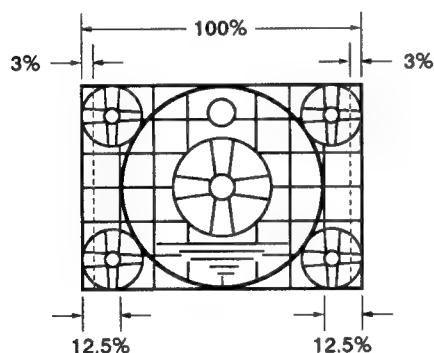
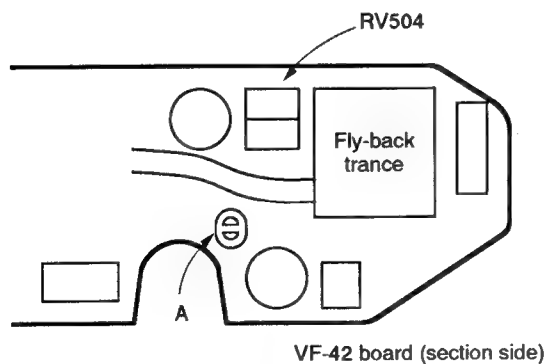


Fig. 7-25.



Section A	Size H
Open	Small
Short	Big

Fig. 7-26.

7-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV502
Specified Value	$5 \pm 2\%$

Adjusting method:

- 1) Adjust RV502 so that the vertical direction over scan becomes $5 \pm 2\%$ (Top and bottom totals).

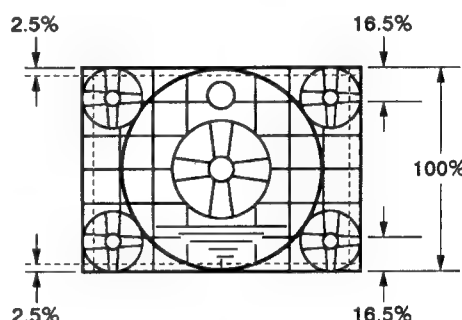


Fig. 7-27.

7-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

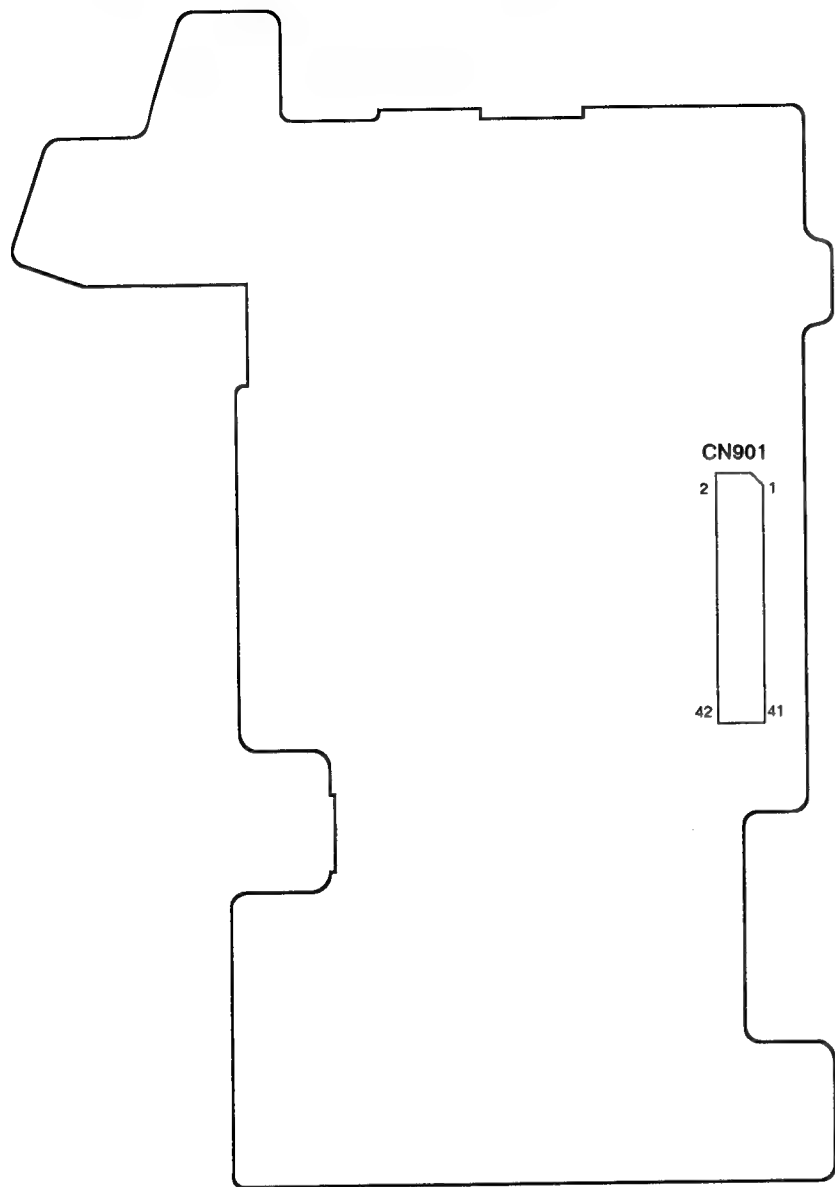
- 1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

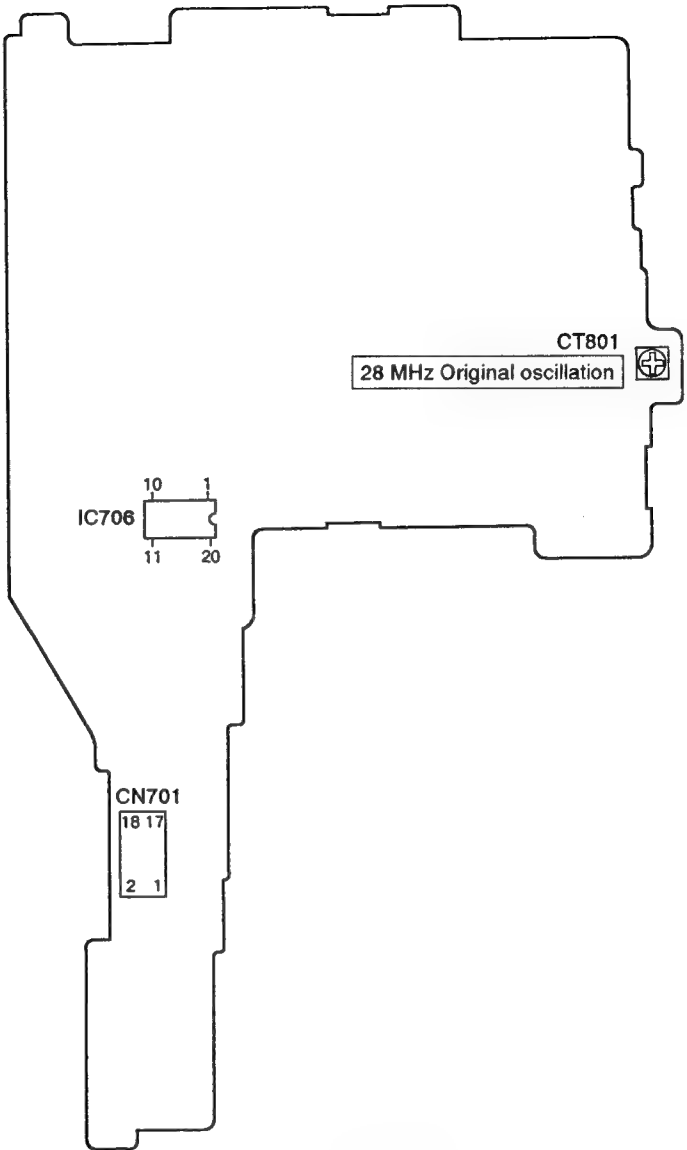
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

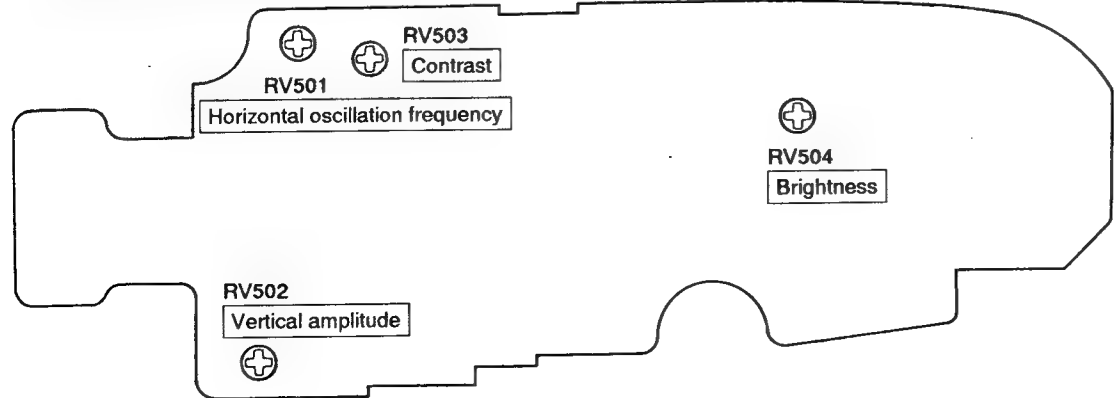
DD-48 BOARD (COMPONENT SIDE)



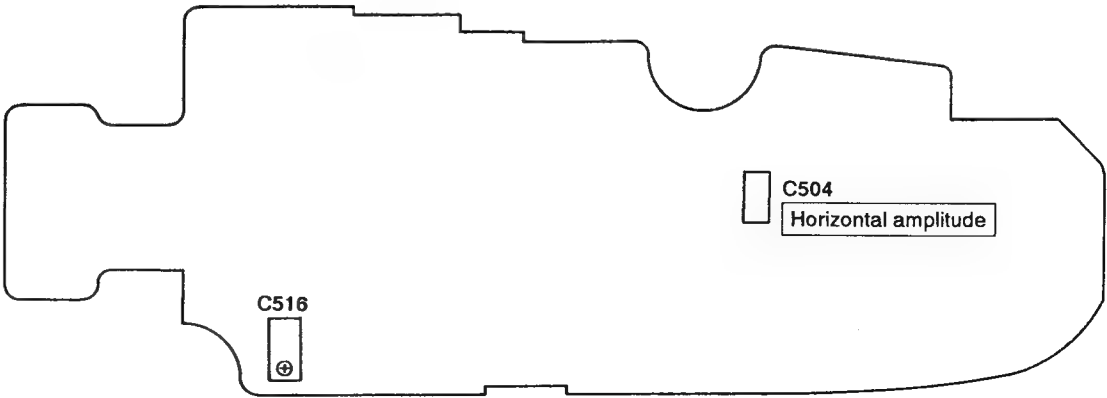
VC-122 BOARD (CONDUCTOR SIDE)



VF-42 BOARD (COMPONENT SIDE)



VF-42 BOARD (CONDUCTOR SIDE)



SECTION 8

MECHANICAL SECTION ADJUSTMENTS

For Mechanical Adjustments

Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)

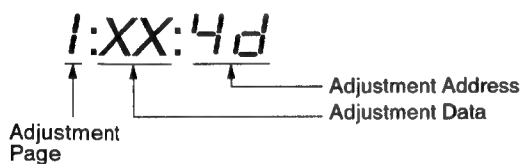
For setting of the track shift mode, however, refer to the following.

8-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]

- 1) Set the adjustment commander to the HOLD ON side.
- 2) Set page: 1, address: 01 and data: 01, and then release the protector.
- 3) Set page: D and address: 01.
- 4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
 (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).
- 5) Set to the HOLD OFF side in order to set the normal mode.



8-2. PREPARATION FOR ADJUSTMENT

- 1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
- 2) Connect to the oscilloscope.
 CH1: VS-95 board CN002 pin ③ (PB RF)
 CH2: VS-95 board CN002 pin ④ (SWP)
- 3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
- 4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet side. (Refer to Fig. 8-1 and 8-2)
 If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment IV (A Mechanism).

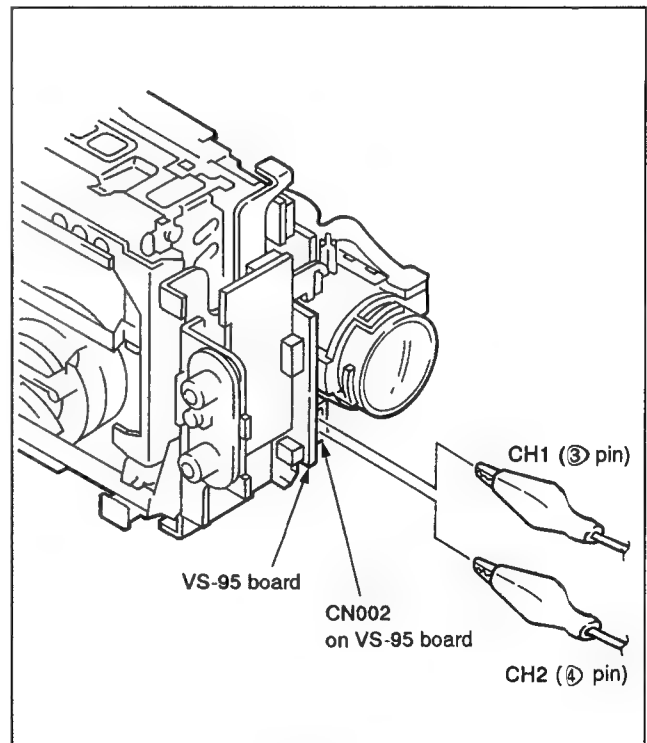


Fig.8-1.

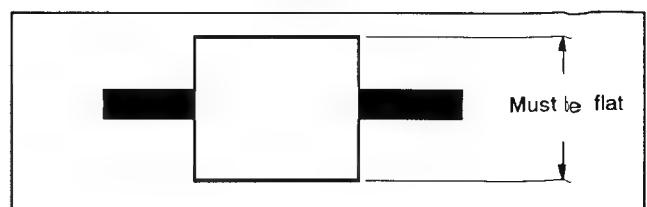


Fig.8-2.

SECTION 9 VIDEO SECTION ADJUSTMENT

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 232.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

9-1-1. Equipments to be used

- 1) TV monitor
 - 2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
 - 3) Frequency counter
 - 4) Pattern generator with video output terminal
 - 5) Digital voltmeter
 - 6) Audio generator
 - 7) Audio level meter
 - 8) Audio distortion meter
 - 9) Audio attenuator
 - 10) Regulated power supply
 - 11) Alignment tape
 - For tracking adjustment (WR5-1CP)
Part Code: 8-967-995-07
 - For video frequency characteristics adjustment (WR5-6C)
Part Code: 8-967-995-17
 - For checking operations (WR5-4CL)^{Note 1}
Part Code: 8-967-995-56
 - (WR5-5CSP)^{Note 2}
Part Code: 8-967-995-47
- Note:** The following alignment tapes can also be used.
- 1) WR5-3CL (8-967-995-36)
 - 2) WR5-4CSP (8-967-995-46)
- 12) Remote control unit for adjustment (J-6082-053-B)
 - 13) DD-48 board extension cord (42P, 0.8 mm)
Part Code: J-6082-195-A
 - 14) AU-138 board, Cabinet (R) extension cord (20P, 0.8 mm)
Part Code: J-6082-196-A
 - 15) Mecha deck extension cord (30P, 0.8 mm)
Part Code: J-6082-167-A

9-1-2. Connecting the equipments

Unless specified otherwise, connect the measuring instruments as shown in Fig. 9-1 and perform the adjustments.

- Camera/player power switchPosition of the player
- Connect the adjusting remote control unit to the remote terminal (DD-48 board CN902).

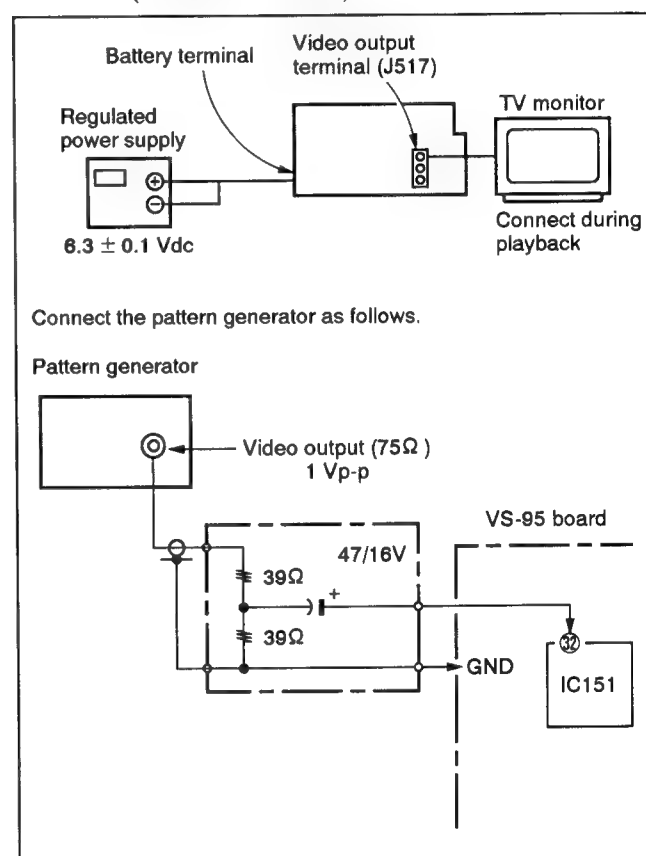


Fig. 9-1.

9-1-3. How to Set the REC Mode

1. REC key forbidden accept mode cancel
 1. Connect the adjustment remote controller to the REMOTE terminal.
 2. Turn on the power.
 3. Turn on the HOLD switch of the adjustment remote controller.
 4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
 5. Select the page: D address: 02, and set the data to 8F [AF].^{Note 1} (REC key forbidden accept mode cancel)
 6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2. REC mode setting
 1. Connect the collector of Q200 on the VS-95 board and GND with a jumper wire. (CCD delay (IC154) active mode setting)
 2. Turn on the HOLD switch of the adjustment remote controller.
 3. Select the page: 1 address: A3, and set data to 01.
 4. Select the page: 1 address: 0B, and set data to C8. (Line input mode setting)
 5. Turn off the HOLD switch of the adjustment remote controller.
 6. Press REC buttons of the adjustment remote controller.
 7. Remove the jumper wire and perform "3. Procedure after completed the adjustment", after completing adjustment.
3. Procedure after completed the adjustment

Be sure to return the mode to REC key forbidden accept mode after adjustment.

 1. Connect the adjustment remote controller to the REMOTE terminal.
 2. Turn on the power.
 3. Turn on HOLD switch of the adjustment remote controller.
 4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
 5. Select the page: D address: 02, and set the data to 8E [AE].^{Note 1} (Setting of the REC key forbidden accept mode)
 6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

Note 1: No mark : AEP, UK model
[] : E, Australian model

9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.

Remove the following connector when removing the EVF section.

1. VS-95 board CN102 (6 PIN)

The front panel section assembly is required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. AU-138 board CN601 (5 PIN)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-196-A) when adjusting the video section.

9-1-5. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ② of IC151 on the VS-95 board, and check that the amplitude of the sync signal of the video signal is approximately 0.15V, the amplitude of the video section is approximately 0.35V, the amplitude of the burst signal is approximately 0.15V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-2.

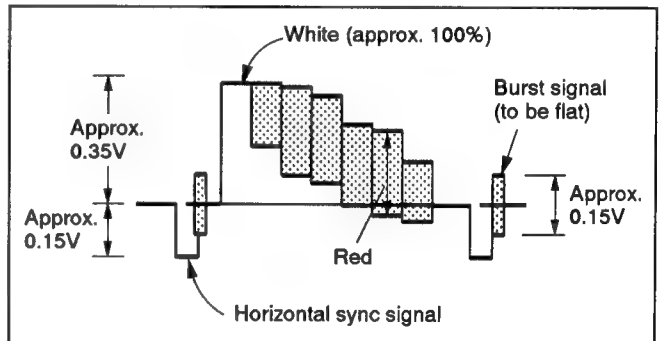


Fig. 9-2. Color Bar Signal of the Pattern Generator

9-1-6. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6C	L	MP	LP	RF sweep 0 to 10 MHz Marker 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	L	MP	SP	<ul style="list-style-type: none"> Video signal Color bar 4 minutes Monoscope 4 minutes Audio signal (AFM) 400 Hz 60% modulation 	<ul style="list-style-type: none"> Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Repeated 4 times 1 kHz 4 minutes 	Checking operations
Operation check (LP mode) WR5-4CL	L	MP	LP	<ul style="list-style-type: none"> Video signal Color bar 4 minutes Monoscope 4 minutes Audio signal (AFM) 400 Hz 60% modulation 		

Note: Recording mode

L Conventional mode
E hi8 (hi band) mode

Tape type

MP Particle type metal tape
ME Evaporated type metal tape

Table 9-1.

Fig. 9-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video input/output terminal
(Terminated at 75 Ω)

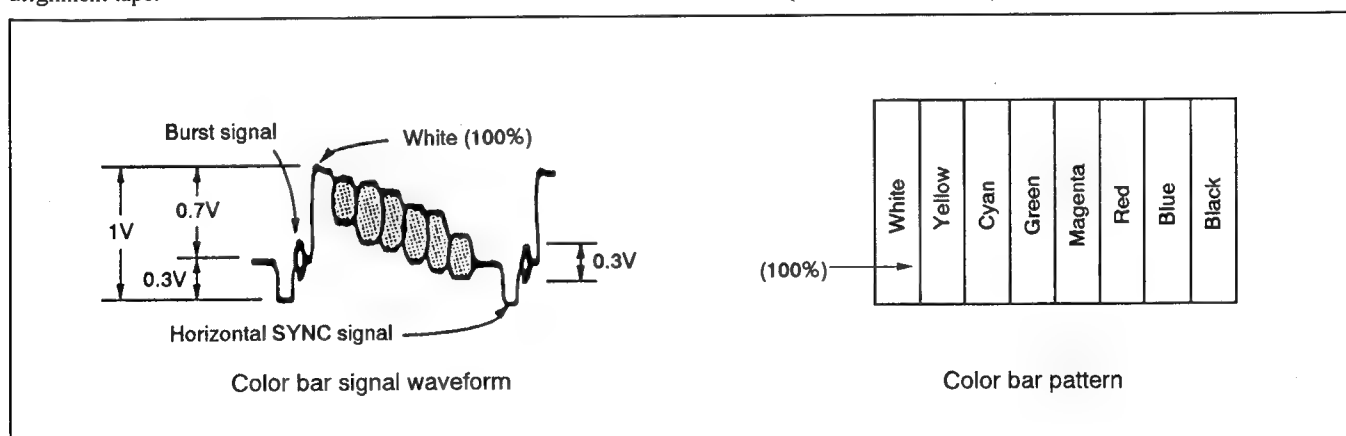


Fig. 9-3. Color Bar Signals of the Alignment Tape

9-1-7. Output Level and Impedance

Video output Pin jack

Output signal: 1 Vp-p, 75 unbalanced, sync
negative

Audio output Pin jack

Specified output: -7.5 dBs
Output impedance: Below 2.2 k Ω

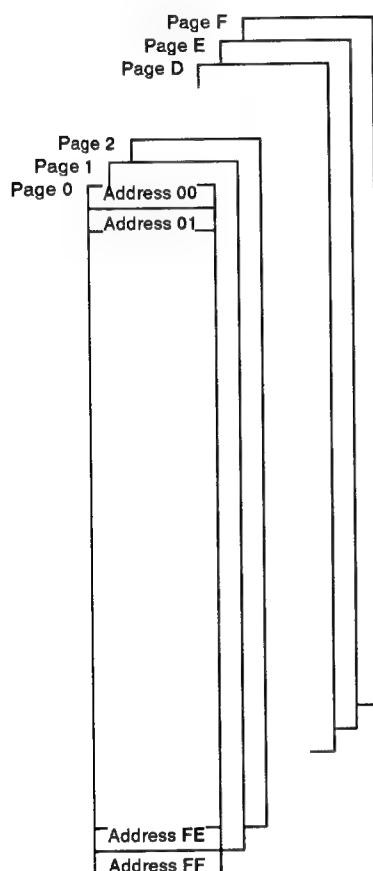
9-1-8. Service Mode

1. Setting the Service mode

The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

(1) Service LANC memory map

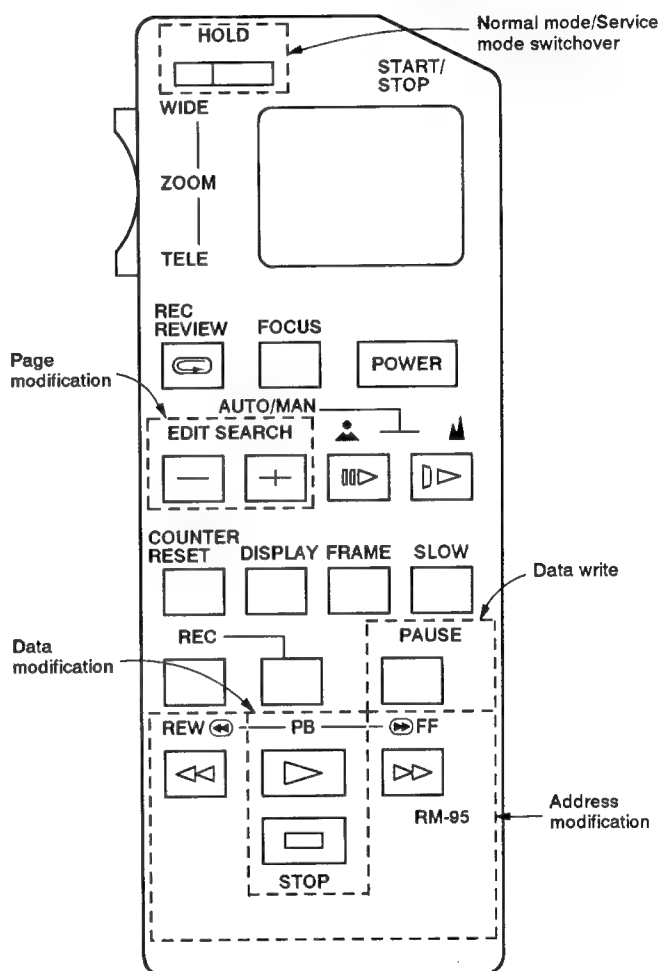


Adjusting Remote Control Unit LCD Display

0:00:00

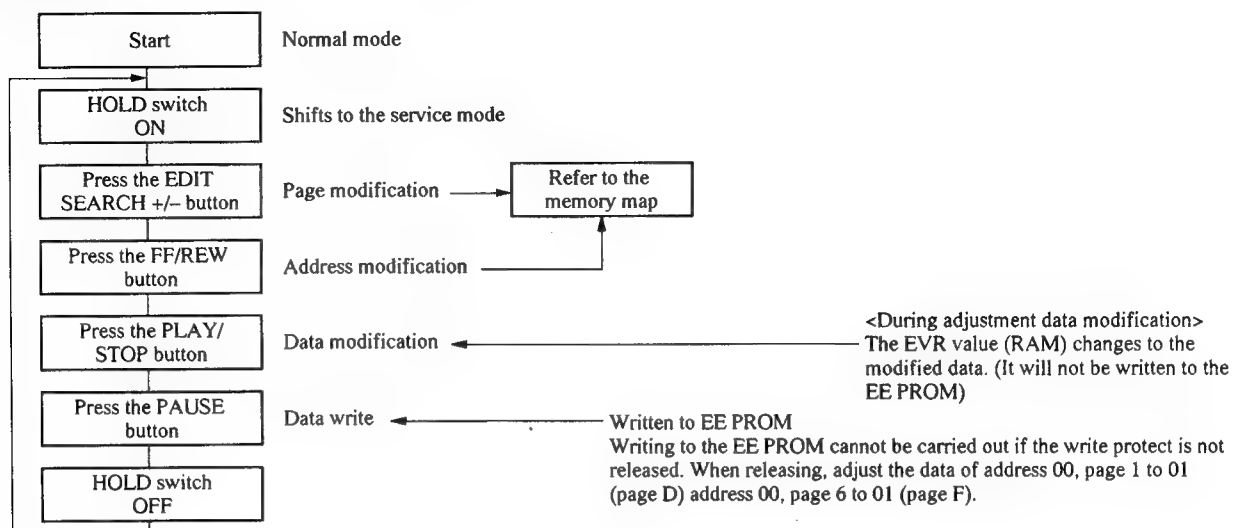
Page Data Address

Adjusting remote control unit RM-95 (J-6082-053-B)



Page	Page allocation	Description
0	Not used	
1	Mode Control RAM, I/O	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2-4	Mechanical Control RAM, I/O	RAM and I/O memory area of the mechanical controller.
5	Not used	
6-8	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
9	Not used	
A	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
B, C	Not used	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data.
E	Not used	
F	Camera EE-PROM	ROM memory area of the camera part. Data of this area is held by EE-PROM when the power is turned off.

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit



Command Name	Command Function	Normal LANC command
Page Up	Page +1	Edit Search +
Page Down	Page -1	Edit Search -
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address -1	Rewind
Data Up	Data +1	Play Back
Data Down	Data -1	Stop
Store	Write the data to the EE PROM. RAM	Pause

2. Types of Self-diagnostic Feature

MODE		Contents
TEST	Camera adjustment	Refer to Camera Adjustment
	Switching position adjustment	Refer to each adjustment page
	Battery DOWN adjustment	
	Video, Audio adjustment	
ADJUST	Pass Adjustment track shift	When adjusting tape pass, set this mode and shift the tracking.
	Emergency STOP inhibition	Detection of emergency is inhibited. This allows the following items. <ul style="list-style-type: none"> • Power is not turned off when the battery is ended. • SP/LP is not automatically distinguished. • Emergence is not detected except for TOP/END detection of the TAPE.
	Read of emergence code	The following functions are added to the emergency display function currently in use. <ol style="list-style-type: none"> ① The lithium battery is not required because to memorize into EE-PROM is allowed. ② The first emergency and the last emergency are memorized. ③ The mode when the emergency is generated is memorized, in addition to the emergency contents.
	Motor single check	Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled. <ul style="list-style-type: none"> • Drum motor • Capstan motor • Loading motor
	Function switch check	The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit.
	Mechanical switch check	The contents of the mechanical switch and the mode switch can be confirmed.
	Sensor check	The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor.
	Reception contents check of wireless remote control	The received code contents of the remote control code can be confirmed.

3. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00
--------	------------

Data	Function
00	Normal (Write protect condition)
01	Write protect release

4. Page F Write Protect

Release/set the page F write protect.

Page 6	Address 00
--------	------------

Data	Function
10	Normal (Write protect condition)
01	Write protect release

5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D	Address 01
Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover 5 minutes pause release inhibition Power off inhibition • release by battery end
02	Test mode 2 1'CH frequency response adjustment (Not used) SP/LP automatic distinction inhibition, manual switchover
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover

- ※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).
- ※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

6. Emergency code

Troubles (errors) can be checked.

Page D	Address 06
--------	------------

First emergency code

.....The first error code generated

Page D	Address 07
--------	------------

Last emergency code

..... The last error code generated (this data will be modified each time an error occurs.)

- ※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.
- ※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	DRUM FG error during drum start up
06	DRUM PG error during drum start up
07	DRUM FG error during drum regular condition
08	DRUM PG error during drum regular condition
09	DRUM Phase error during drum regular

7. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08
--------	------------

First emergency mode

.....The operation mode when the first error is generated

Page D	Address 09
--------	------------

Last emergency mode

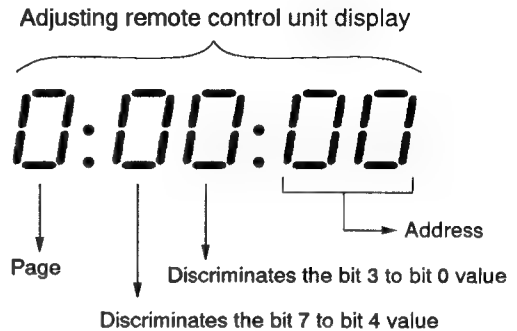
.....The operation mode when the last error is generate^d
(This data will be modified each time an error occurs.)

- ※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.
- ※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.
- ※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
36	-X1
37	-1/5 SLOW
46	CUE
47	1/10 SLOW
56	REVIEW
57	-1/10 SLOW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
76	-X2
77	-FRAME
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(-)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(-)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.



Remote Control Unit Display	Bit Value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
①→ 8	1	0	0	0
9	1	0	0	1
A (R)	1	0	1	0
B (b)	1	0	1	1
C (c)	1	1	0	0
D (d)	1	1	0	1
②→ E (E)	1	1	1	0
F (F)	1	1	1	1

(Example) When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column ①, and that of bit 3 to bit 0 can be discriminated from column ②.

9. Check of Tape Distinction Switch, etc.

Page 2	Address E9
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
			CC DOWN	REC PROOF	ME/MP		

Bit2: "1"=ME tape
 "0"=MP tape
 Bit3: "1"=Recording impossible
 "0"=Recording possible
 Bit4: "0"=During cassette compartment lock

Page 1	Address 3D
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
V MUTE	A MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	LP/SP

Bit0: "1"=LP mode playback
 "0"=SP mode playback
 Bit1: "1"=SYNC is detected
 "0"=SYNC is not detected
 Bit2: "1"=CLOG is detected
 "0"=Normal
 Bit3: "1"=When the PB RF signals are being playback normally
 "0"=Others
 Bit4: "1"=JOG mode
 "0"=Other
 Bit5: "1"=Playback mode
 "0"=Others
 Bit6: "1"=AUDIO MUTE: ON
 "0"=AUDIO MUTE: OFF
 Bit7: "1"=VIDEO MUTE: ON
 "0"=VIDEO MUTE: OFF

Page 1	Address 42
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
						DEW	

Bit1: "0"=Dew outbreak
 "1"=Others

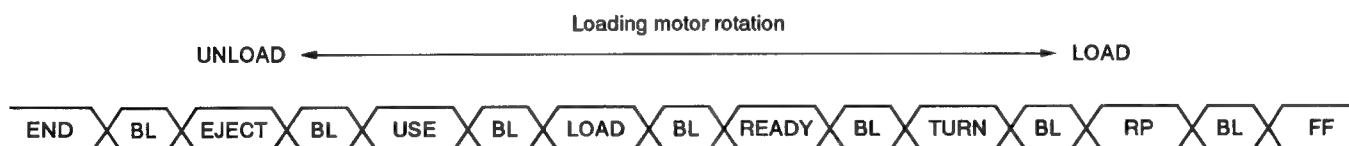
10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

Page 2	Address E9
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 0	MSW 1	MSW 2	CC DOWN				

			POSITION	FUNCTION	CC DOWN
1	1	1	BL	Interval of each position	
0	1	1	END	FULL END processing (T side lock removal)	1
0	0	1	EJECT	Cassette compartment ejection	1
1	0	1	USE	EJECTED (Unskate end)	1
0	0	1	LOAD	LOADING (Skate in)	0
1	0	0	READY	NORMAL STOP position	0
1	1	0	TURN	OFF of pinch roller only with PB ↔ REV (oscillating position)	0
0	1	0	RP	PB, REC, RVS, REV, REW	0
0	0	0	FF	FF/CUE	0



11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14
--------	------------

Checking method:

- 1) Set data: 02 to page: 4, address: 0E.
(A/D conversion processing active)
- 2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

Data	A/D Port
00	Pin ⑫: AN0 (T REEL FG)
01	Pin ⑪: AN1 (S REEL FG)
02	Pin ⑩: AN2 (ATF ERROR)
03	Pin ⑨: AN3 (BATT SENS)
04	Pin ⑧: AN4 (DEW)

- 3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

12. Tape Top/End Sensor Condition Check

Page 4	Address 0A
--------	------------

Checking method:

- 1) Set data: 10 to page: 4, address: 0E.
(Tape top/end sensor condition sampling processing active)
- 2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape end
1 0	Tape top
1 1	No tape

Tape end sensor condition
 Tape top sensor condition

"0"=Non-active (Not receiving light)
 "1"=Active (Receiving light)

13. Battery Voltage Check

Page 4	Address 10
--------	------------

Adjusting Remote Control Unit Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4Vdc
E0	Approx. 8.8Vdc
D0	Approx. 8.2Vdc
C0	Approx. 7.5Vdc
B0	Approx. 6.9Vdc
A0	Approx. 6.3Vdc
90	Approx. 5.6Vdc
80	Approx. 5.0Vdc

14. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11
--------	------------

- 1) Adjust the mechanical section to the loading completion condition.
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Set data: 01 to page: 4, address: 0E.
(Control permission from the adjusting remote control unit of the motor)
- 4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
- 5) After checking the operations, turn off the main power (6.3 Vdc).

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

15. Mode control micro processor key matrix check

The key input can be checked.

Page 1	Address 68~6D
--------	---------------

	Bit7	Bit6 (K IN 6)	Bit5 (K IN 5)	Bit4 (K IN 4)	Bit3 (K IN 3)	Bit2 (K IN 2)	Bit1 (K IN 1)	Bit0 (K IN 0)
Address 68 (K OUT 0)		LENS COVER OPEN (MF-191 S973)	VTR POWER (VK-27 S977)	EDIT SEARCH (CUE) (VK-27 S981)	PAUSE (VK-27 S984)	EDIT SEARCH (+) (VK-27 S981)	EJECT (DD-48 S901)	
Address 69 (K OUT 1)		BUZZER ON/OFF (ED-35 S986)	CAMERA POWER (VK-27 S977) (SW-205 S519)	FF (VK-27 S983)	PLAY (VK-27 S980)	REW (VK-27 S979)	STOP (VK-27 S976)	
Address 6A (K OUT 2)		NIGHT (CF-32 S997)			EDIT SEARCH (REV) (VK-27 S978)	EDIT SEARCH (-) (VK-27 S978)	COUNTER RESET (CF-32 S995)	SP/LP EDIT ON/OFF (ED-35 S990)
Address 6B (K OUT 3)		PORTREIT (CF-32 S997)			TIME (CF-32 S996)	DATE (CF-32 S993)		
Address 6C (K OUT 4)		SPORTS (CF-32 S997)		AUTO FOCUS ON/OFF (MF-191 S971)				
Address 6D (K OUT 5)		HIGH SPEED SHUTTER (CF-32 S997)	AREA (ED-35 S989)	DST or SUMMER TIME (ED-35 S987)		FADER (CF-32 S991)	START/ STOP (SW-205 S520)	REMOTE COMMANDER (ED-35 S988)

"1"=key switch ON

"0"=key switch OFF

16. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E
--------	------------

Wireless remote control unit key pressed	Data
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19
SLOW	23

17. EDIT Switch, Remote Commander Switch Check

Page 1	Address 0A
--------	------------

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
REC MODE (SP/LP)	REMOTE COMMANDER		EDIT				

Bit7: "1"=LP
 "0"=SP
 Bit6: "1"=OFF
 "0"=ON
 Bit4: "1"=EDIT ON
 "0"=EDIT OFF

18. White Balance Mode and Focus Mode Display/Switchover

Page 1	Address 9A
--------	------------

The mode can be switched when the data of page: 1, address: A3 is set to 04.

Data	White Balance Mode
* 1	INDOOR
* 2	OUTDOOR
* 3	HOLD
* 6	AUTO

Data	Focus Mode
0 *	Manual
1 *	Automatic

* : 0 to F

19. LCD, LED Check, etc.

Page 1	Address A3
--------	------------

Data	Mode
00	Normal
01	Key input prohibited
04	Camera function renewal prohibited

20. Page D Address List

Note 1: The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

Note 2: The data listed in the adjustment data memo column are the fixed data.

Check that these data have not been accidentally rewritten, after completing adjustments.

*1 No mark : AEP, UK model
[] : E, Australian model

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data							
			Initial value	Memo column						
00	Category code	Not used								
01	Test mode		00	00						
02	Destination flag		8E[AE]*1	8E[AE]*1						
03	BATT END	Battery end adjustment	8C							
04	SW POSITION	SW POSITION adjustment	00							
05	SW POSITION	SW POSITION adjustment	0A							
06	EMERGENCY code (FIRST)	Error code and mode are memorized. Rewrite the data of these addresses to 00 after repairs/adjustments	00	00						
07	EMERGENCY code (LAST)		00	00						
08	EMERGENCY mode (FIRST)		00	00						
09	EMERGENCY mode (LAST)		00	00						
0A	SR DATA (MP Normal SP)	CXA1207 serial data	24	24						
0B	SR DATA (MP Normal LP)	CXA1207 serial data	16	16						
0C	SR DATA (ME Hi8 SP)	CXA1207 serial data	24	24						
0D	SR DATA (ME Hi8 LP)	CXA1207 serial data	16	16						
0E	SR DATA (ME Normal SP)	CXA1207 serial data	24	24						
0F	SR DATA (ME Normal LP)	CXA1207 serial data	16	16						
10	SR DATA (MP Hi8 SP)	CXA1207 serial data	24	24						
11	SR DATA (MP Hi8 LP)	CXA1207 serial data	16	16						
12	SR DATA (EDIT ON Normal)	CXA1207 serial data	16	16						
13	SR DATA (EDIT ON Hi8)	CXA1207 serial data	16	16						
14	CAM TITLE BLU R-Y	Camera titler color adjustment [Blue]. Not used								
15	CAM TITLE BLU B-Y	Camera titler color adjustment [Blue]. Not used								
16	CAM TITLE GRN R-Y	Camera titler color adjustment [Green]. Not used								
17	CAM TITLE GRN B-Y	Camera titler color adjustment [Green]. Not used								
18	CAM TITLE CYN R-Y	Camera titler color adjustment [Light blue]. Not used								
19	CAM TITLE CYN B-Y	Camera titler color adjustment [Light blue]. Not used								
1A	CAM TITLE RED R-Y	Camera titler color adjustment [Red]. Not used								
1B	CAM TITLE RED B-Y	Camera titler color adjustment [Red]. Not used								
1C	CAM TITLE VIO R-Y	Camera titler color adjustment [Violet]. Not used								
1D	CAM TITLE VIO B-Y	Camera titler color adjustment [Violet]. Not used								
1E	CAM TITLE YEL R-Y	Camera titler color adjustment [Yellow]. Not used								
1F	CAM TITLE YEL B-Y	Camera titler color adjustment [Yellow]. Not used								
20	Permission plug		04	04						
21	Adjustment plug	FORCED VTR ON, CAM ON etc <table><tr><td>DATA</td><td>MODE</td></tr><tr><td>01</td><td>FORCED CAMERA POWER ON</td></tr><tr><td>02</td><td>FORCED VTR POWER ON</td></tr></table>	DATA	MODE	01	FORCED CAMERA POWER ON	02	FORCED VTR POWER ON	00	00
DATA	MODE									
01	FORCED CAMERA POWER ON									
02	FORCED VTR POWER ON									
22~29		Not used								

Table 9-2 (1).

Address	Name	Function [] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
2A	SLOW ADJ (FOWARD)		00	00
2B	SLOW ADJ (REVERSE)		00	00
2C	STILL ADJ		00	00
2D	BATT REMAIN LEVEL 1	Amount of remaining battery 1	A0	
2E	BATT REMAIN LEVEL 2	Amount of remaining battery 2	99	
2F	BATT REMAIN LEVEL 3	Amount of remaining battery 3	94	
30~42		Not used		
43	1-ch M.T NORMAL	1 ch playback frequency characteristic adjustment [IC158 ②]	C0	
44				
45	2-ch M.T NORMAL	2 ch playback frequency characteristic adjustment [IC158 ③]	C0	
46	REC C RF (EE)	REC C RF level adjustment (EE) [IC156 ⑩]	B8	
47	REC C RF (PB)	REC C RF level adjustment (PB) [IC156 ⑩]	00	00
48	RF CONT (ME)	ATF RF level (ME) [IC158 ⑤]	64	64
49	RF CONT (MP)	ATF RF level (MP) [IC158 ⑤]	70	70
4A	EE LEVEL	EE level adjustment [IC156 ⑮]	70	70
4B		Not used		
4C	COMB ADJ	Chroma comb filter adjustment [IC156 ③]	A8	
4D	SR-IR	IR adjustment [IC156 ②]	AE	
4E	Y-FM CARRIER (Hi8)			
4F	Y-FM CARRIER (NORMAL)	Y-FM carrier frequency adjustment [IC156 ⑤]	A8	
50	Y-FM DEVIATION (Hi8)			
51	Y-FM DEVIATION (NORMAL)	Y-FM deviation adjustment [IC156 ⑥]	95	
52	REC Y LEVEL (EE Hi8 ME)			
53	REC Y LEVEL (EE Hi8 MP)			
54	REC Y LEVEL (EE NOR ME)	REC Y recording current adjustment (ME) [IC156 ⑦]	95	
55	REC Y LEVEL (EE NOR MP)	REC Y recording current adjustment (MP) [IC156 ⑦]	95	
56	REC Y LEVEL (PB)	Playback REC Y level [IC156 ⑦]	00	00
57	PB Y LEVEL (EE)	EE PB Y level [IC158 ⑮]	00	00
58	PB Y LEVEL (Hi8)			
59	PB Y LEVEL (NORMAL)	Normal PB Y level adjustment [IC158 ⑮]	B0	
5A	EMPHASIS INPUT LEVEL	EE emphasis input level adjustment [IC156 ④]	A5	
5B	PB LINE LEVEL	Playback emphasis input level adjustment [IC156 ④]	AF	
5C~79		Not used		
7A	1.5 IR	1.5 MHz IR adjustment [IC158 ⑥]	A0	
7B	1.5 DEV	1.5 MHz deviation adjustment [IC158 ⑦]	A0	
7C~FF		Not used		

Table 9-2 (2)

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD-48 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q903 collector
Measuring Instrument	Frequency counter
Specified Value	510 ± 35 kHz

Adjusting method:

- 1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD-48 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVF 5V check	
Measurement Point	Pin ⑪ of CN901
Specified Value	4.93 ± 0.15 Vdc
D5V check	
Measurement Point	Pins ⑤ and ⑧ of CN901
Specified Value	4.92 ± 0.15 Vdc
D4V check	
Measurement Point	Pin ④ of CN901
Specified Value	3.98 ± 0.15 Vdc
VID 5V check	
Measurement Point	Pins ⑰, ⑳ of CN901
Specified Value	4.90 ± 0.10 Vdc
RP 5V check	
Measurement Point	Pin ㉔ of CN901
Specified Value	4.89 ± 0.15 Vdc
AU5V check	
Measurement Point	Pin ⑲ of CN901
Specified Value	4.90 ± 0.15 Vdc
CAM5V check	
Measurement Point	Pins ⑦ and ⑩ of CN901
Specified Value	4.86 $\begin{smallmatrix} + 0.15 \\ - 0.11 \end{smallmatrix}$ Vdc
CAM15V check	
Measurement Point	Pin ⑫ of CN901
Specified Value	15.05 ± 0.4 Vdc
CAM -9V check	
Measurement Point	Pin ⑨ of CN901
Specified Value	-8.5 ± 0.4 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "9-1-8. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 7D

Input method:

- 1) Release the write protect.
Page: 1, address: 00, data: 01
- 2) Select page D, and input the initial value to each address.
(After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END) 2D (BATT REMAIN LEVEL 1) 2E (BATT REMAIN LEVEL 2) 2F (BATT REMAIN LEVEL 3)

Connection:

- 1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

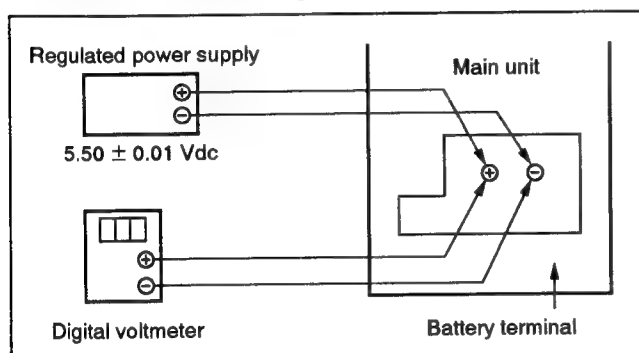


Fig. 9-4.

Adjusting method:

- 1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is $6.3 \pm 0.1 \text{ Vdc}$.
 - 2) Release the protect.
Page: 1, address: 00, data: 01
 - 3) Set data: 01 to page: D, address: 01.
(Test mode 1 setting)
 - 4) Set to the camera recording mode.
 - 5) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is $5.50 \pm 0.01 \text{ Vdc}$.
 - 6) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
 - 7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
 - 8) Convert DEND to decimal to obtain DEND'. (Refer to Table 7-6. "Hexadecimal notation — decimal notation conversion table")
 - 9) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
Address: 2D $D2D' = DEND' + 18$
Address: 2E $D2E' = DEND' + 14$
Address: 2F $D2F' = DEND' + 8$
- Note:** After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
- 10) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Test mode 1 release)
 - 11) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

- 1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

- 1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes $6.3 \pm 0.1 \text{ Vdc}$.
- 2) Set to the camera recording mode.
- 3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes $5.70 \pm 0.01 \text{ Vdc}$.
- 4) Check that the \square mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
- 5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes $5.58 \pm 0.01 \text{ Vdc}$.
- 6) Check that the \square mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
- 7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes $5.42 \pm 0.01 \text{ Vdc}$.
- 8) Check that the \square mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-95 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ④ of CN002 (RF SWP) CH2: Pin ③ of CN002 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) 05 (SW POSITION)
Specified Value	$t_1 = 0 \pm 10 \mu\text{sec}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Set data: 0A to page: D, address: 05.
- 3) Change the data of page: D, address: 05 and minimize "t₁".
(Coarse adjustment)
- 4) Press the PAUSE button of the remote control unit.
- 5) Change the data of page: D, address: 04, and adjust so that the switching position (t₁) becomes the specified value.
(Fine adjustment)
- 6) Press the PAUSE button of the adjusting remote control unit.

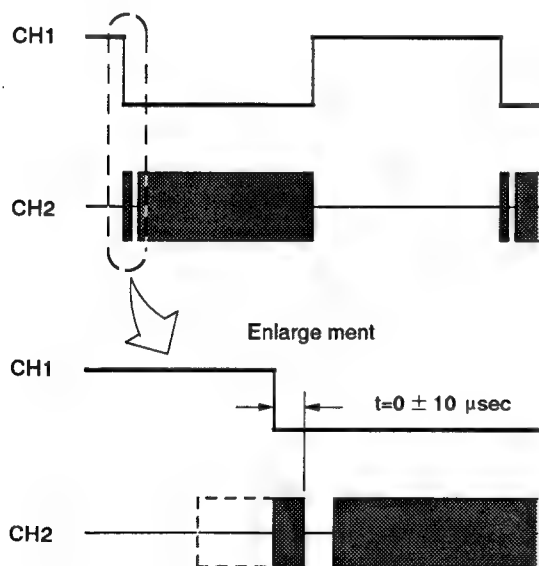


Fig. 9-5.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.

The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-2.

[Adjusting procedure]

- 1) Playback frequency characteristic adjustment
- 2) Flying erase check
- 3) VXO oscillation frequency check
- 4) EE level adjustment
- 5) IR adjustment
- 6) Y/C separation adjustment
- 7) Emphasis input level adjustment
- 8) PB Y level adjustment
- 9) PB LINE OUT level adjustment
- 10) Y FM carrier frequency adjustment
- 11) Y FM deviation adjustment
- 12) Chroma emphasis f₀ adjustment
- 13) REC Y level adjustment
- 14) REC C level adjustment
- 15) REC ATF level check
- 16) REC AFM level check

1. Playback Frequency Characteristic Adjustment (VS-95 board)

Note 1: The adjusting element for CH2 is shown in parentheses [].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6C)
Measurement Point	CH1: Pin ③ of CN002 EXT TRIG: Pin ④ of CN002
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [-]
Adjustment Page	D
Adjustment Address	43 (MT 1CH) [45 (MT 2CH)]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) After memorizing the data of page: D, address: 05, set data: 10.
- 3) Press the PAUSE button of the adjusting remote control unit.
- 4) Change the data of address: 43 [45] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.

Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.

- 5) Set the data memorized at step 2) to page: D, address: 05, and press the PAUSE button of the adjusting remote control unit.

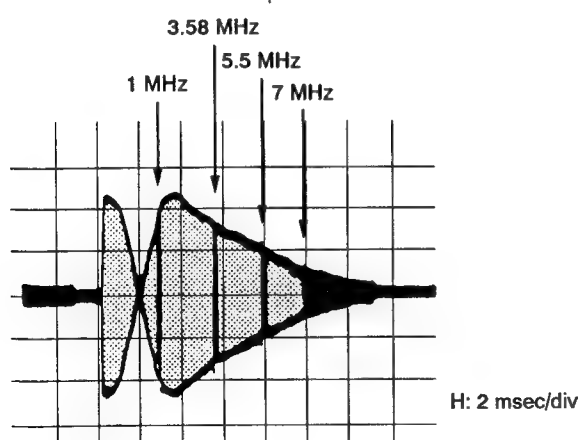


Fig. 9-6.

2. Flying Erase Check (VS-95 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of W001 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: approx. 7.5 MHz Voltage: Above 1.5 Vp-p

Note: Use a MP type tape.

Checking method:

- 1) Check that the oscillation frequency is approx. 7.5 MHz and that the oscillation voltage is above 1.5 Vp-p.

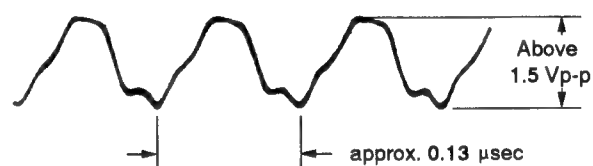


Fig. 9-7.

3. VXO Oscillation Frequency Check (VS-95 board)

Mode	STOP
Signal	Color bar
Measurement Point	Pin ⑫ of IC152
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

- 1) Check that the oscillation frequency of pin ⑫ of IC152 is 4433618 ± 70 Hz.

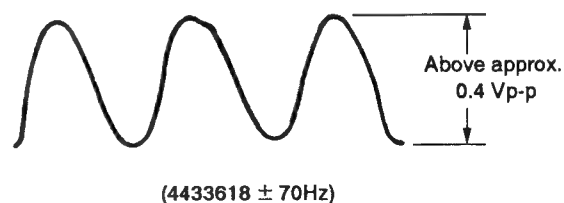


Fig. 9-8.

4. EE Level Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ② of CN101 (VIDEO OUT) ^{Note}
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (EE LEVEL)
Specified Value	$A=1.00 \pm 0.025V$

Note: Terminate pin ② of CN101 at 75 Ω .

After completing adjustments, remove the 75 Ω resistor.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

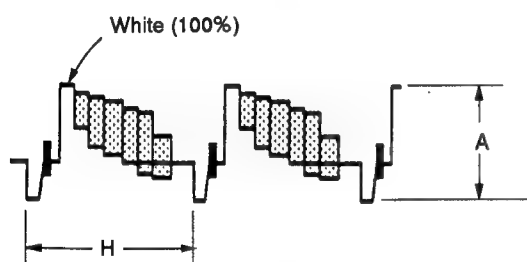


Fig. 9-9.

5. IR Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑦ of IC151 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 80 mVp-p)

Connection

- 1) Connect pin ⑭ of IC151 (VREF: 3.5 Vdc) or pin ② of IC159 to pin ⑤ of IC151 with a jumper wire.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
- 3) Press the PAUSE button of the adjusting remote control unit.

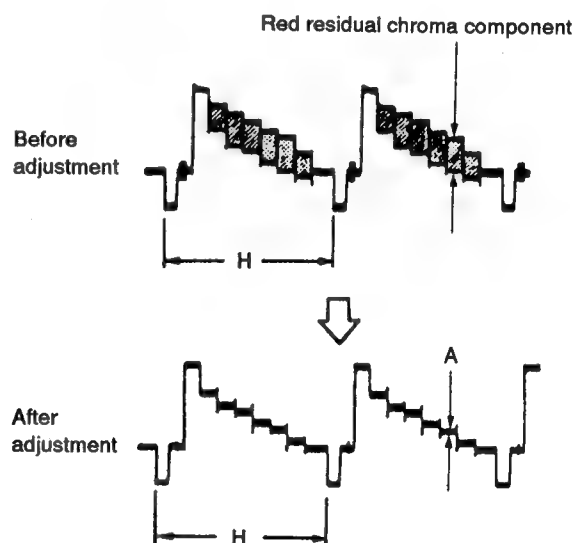


Fig. 9-10.

6. Y/C Separation Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑩ of IC151 (C+CD)
Adjusting Element	Oscilloscope
Measuring Instrument	RV051 (Phase)
Adjustment Page	D
Adjustment Address	4C (Y/C SEP DL LEVEL)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
- 3) Adjust RV051 so that the residual chroma component (A) becomes minimum.
- 5) Press the PAUSE button of the adjusting remote control unit.

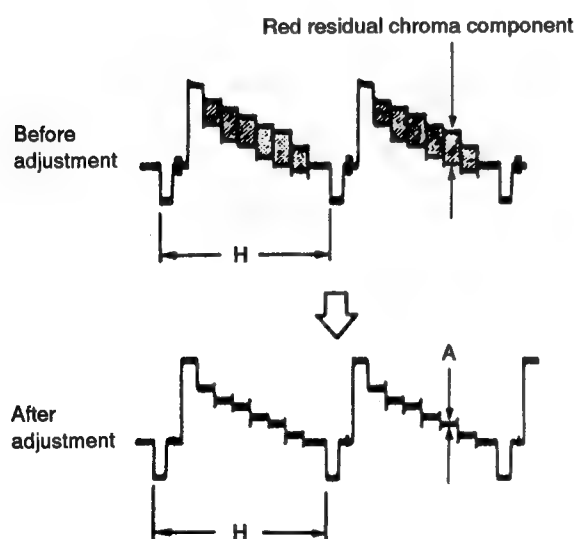


Fig. 9-11.

7. Emphasis Input Level Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar without burst signal
Measurement Point	Pin ③ of IC155 (or Pin ③ of IC151)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPHASIS INPUT LEVEL)
Specified Value	$A=0.50 \pm 0.025V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

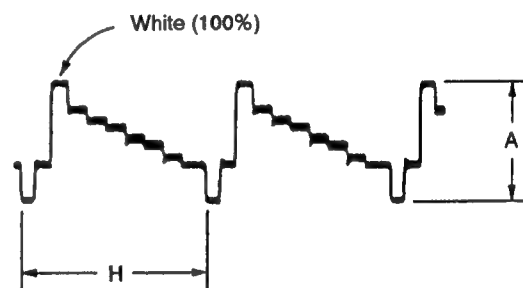


Fig. 9-12.

8. PB Y Level Adjustment (VS-95 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Pin ② of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (NORMAL PB Y LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
- 3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
- 4) Press the PAUSE button of the adjusting remote control unit.

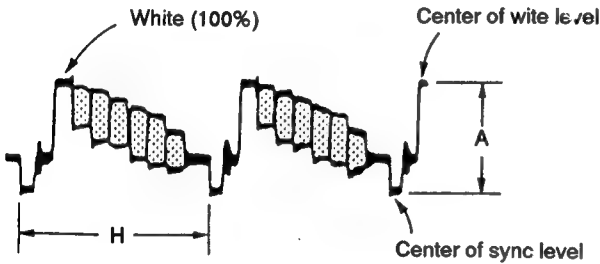


Fig. 9-13.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal (terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

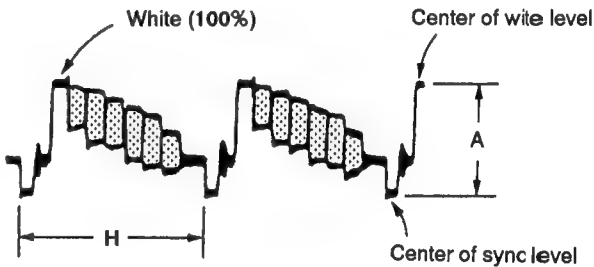


Fig. 9-14.

10. Y FM Carrier Frequency Adjustment (VS-95 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑤ of IC003 (REC Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (Y FM CARRIER)
Specified Value	4.38 ± 0.04 MHz

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.
- 4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

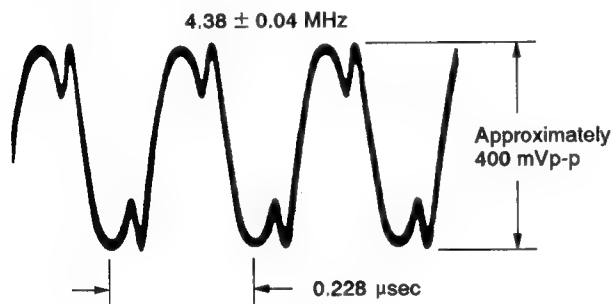


Fig. 9-15.

11. Deviation Adjustment (VS-95 board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ② of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (Y FM DEVIATION)
Specified Value	$A=0.50 \pm 0.025V$

Note: Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Record the color bar signal.
- 3) Playback the recorded signal.
- 4) Check the playback signal level (A).
Specification: $A=0.50 \pm 0.025V$
- 5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

- 6) Press the PAUSE button of the adjusting remote control unit.

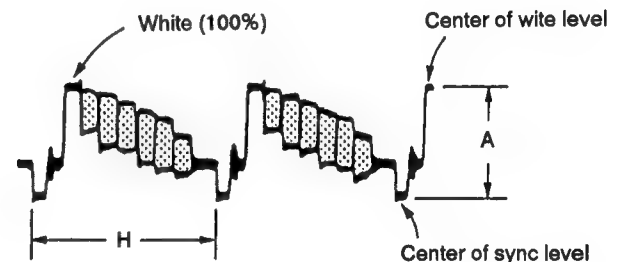


Fig. 9-16.

12. Chroma Emphasis f₀ Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ②④ of IC152
Measuring Instrument	Oscilloscope
Adjustment Element	FL153
Specified Value	Minimum f ₀ component

Connection:

- 1) Connect pin ②④ of IC152 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method

- 1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

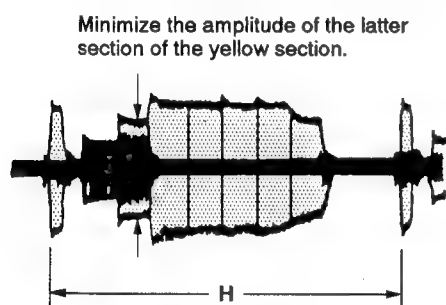


Fig. 9-17.

13. REC Y Level Adjustment (VS-95 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑤ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	55 (REC Y LEVEL EE NOR MP) 54 (REC Y LEVEL EE NOR ME)
Specified Value	A=205 ± 5 mVp-p

Note: Use a MP type tape.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.
- 4) Set the data of page: D, address: 55 to page: D, address: 54.
- 5) Press the PAUSE button of the adjusting remote control unit.

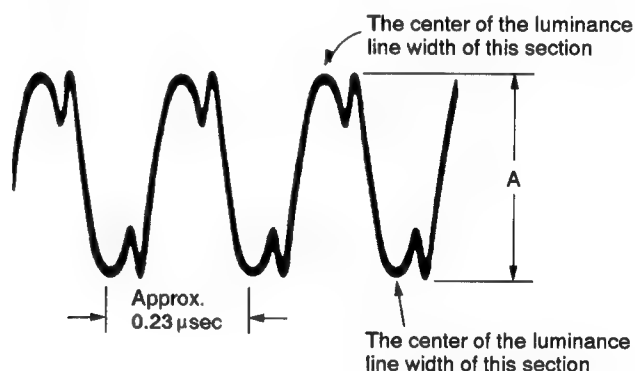


Fig. 9-18.

14. REC C Level Adjustment (VS-95 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ③ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF (EE))
Specified Value	$A=110 \pm 10 \text{ mVp-p}$

Note: Use a MP type tape.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 46, and adjust so that the REC C level (A) becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

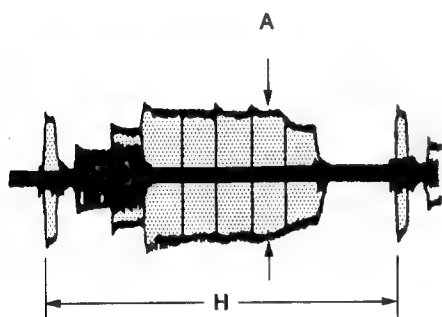


Fig. 9-19.

15. REC ATF Level Check (VS-95 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ② of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	$A=8 \pm 2 \text{ mVp-p}$

Note: Use a MP type tape.

Connection:

- 1) Remove the AU-138 board CN602.

Checking method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
Note: Don't press the PAUSE button of the adjusting remote control unit.
- 3) Check that the REC ATF signal level (A) satisfies the specified value.
- 4) Turn the main power supply (6.3V) off.

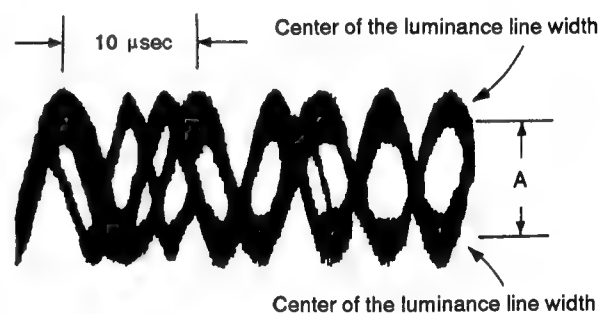


Fig. 9-20.

16. REC AFM Level Check (VS-95 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ② of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	$A=9 \pm 2 \text{ mVp-p}$

Note: Use a MP type tape.

Connection:

- 1) Connect Pin ⑨ of IC404 and GND with a $0.01 \mu\text{F}$ capacitor (1-101-004-00).

Checking method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
Note: Don't press the PAUSE button of the adjusting remote control unit.
- 3) Check that the REC AFM signal level (A) satisfies the specified value.
- 4) Turn the main power supply (6.3V) off.

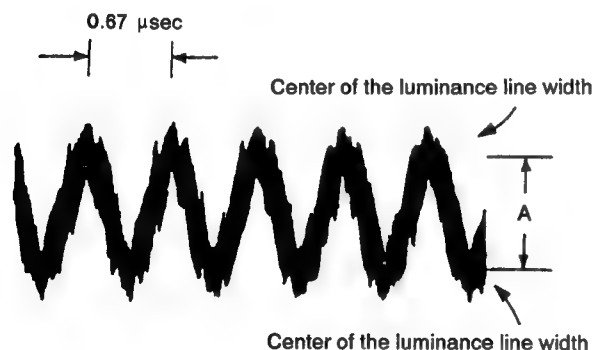


Fig. 9-21.

9-6. AUDIO SYSTEM ADJUSTMENT

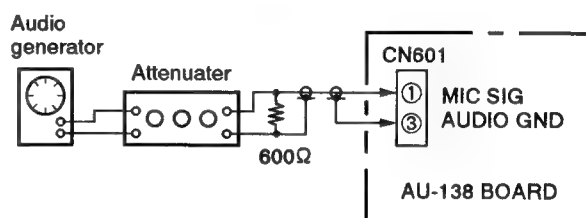
- Perform the adjustment using the color bar signal as a video signal input.

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-22, and perform adjustments with the power switch [player] position.

- Connection of Audio generator and attenuator except for "Overall Level Characteristic, Distortion Check" and "Overall Noise Level Check".

Note: Remove the MA-149 board.



- Connection of Audio level meter or distortion meter

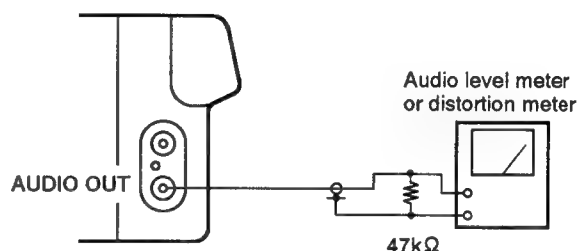


Fig. 9-22.

[Adjustment Procedure]

- 1) E-E output level check
- 2) IR adjustment
- 3) Deviation adjustment
- 4) Carrier frequency check
- 5) Recording level check
- 6) Overall level characteristics, distortion check
- 7) Overall noise level check

1. E-E Output Level Check (AU-138 board)

Mode	Record
Signal	400 Hz, -36.1 dBs, pin ① of CN601
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	-7.5 ± 2 dBs

Checking method:

- 1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment (AU-138 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	+: Pin ⑥ of IC601 -: Pin ④ of IC601 (C629 ⊕)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR)
Specified Value	The DC voltage difference between pins ④ and ⑥ is 0 ± 10 mVdc

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 7A and adjust so that the DC voltage becomes 0 ± 10 mVdc.
- 3) Press the PAUSE button of the adjusting remote control unit.

3. Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	-7.5 ± 0.5 dBs

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
- 3) Press the PAUSE button of the adjusting remote control unit.

4. Carrier Frequency Check (AU-138 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑩ of CN602 (REC AFM)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:

- 1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Record Level Check (AU-138 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑩ of CN602 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	$A=48 \pm 8$ mVp-p

Checking method:

- 1) Check that the 1.5 MHz carrier level satisfies the specified value.
(Read the center of the luminance line width and note down the level read.)

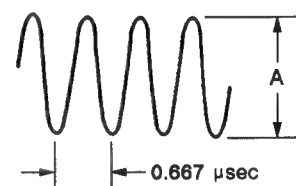


Fig. 9-23.

8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

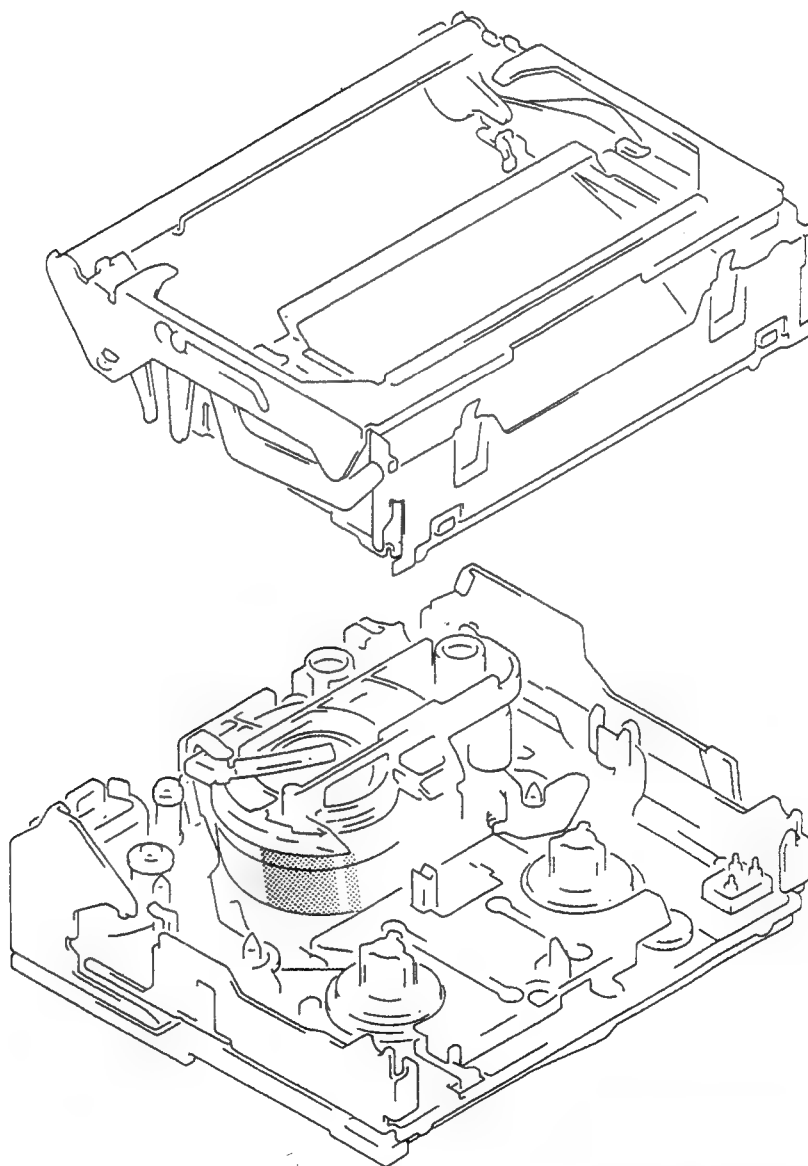


V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER
SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.

Mechanical adjustment is done in the **USE** mode. (To select the **USE** mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

- 1) Select the **USE** mode.
- 2) Push the part ③ of lock arm **1** toward the arrow **A** to unlock from lock guide **2**, and raise the cassette compartment as shown in Fig. a.
- 3) Remove two screws **3** and remove the LS frame **4** toward the arrow **B**.
- 4) With the cassette compartment assembly **5** pushed in arrow **C** direction, distort tabs **5** and **6** of MD side plate toward the arrow **D** to disengage from catches **7** and **8** of cassette compartment assembly respectively.

In such a case, insert a screwdriver between MD side plate and catch and disengage the tab **5** first, then disengage the tab **6** for easy removal as shown in Fig. b.

- 5) Raise the cassette compartment assembly **5** in the opposite direction of arrow **C** until the shafts **1** and **2** are disengaged, and push left and right side plates toward arrow **D** to remove the cassette compartment assembly.

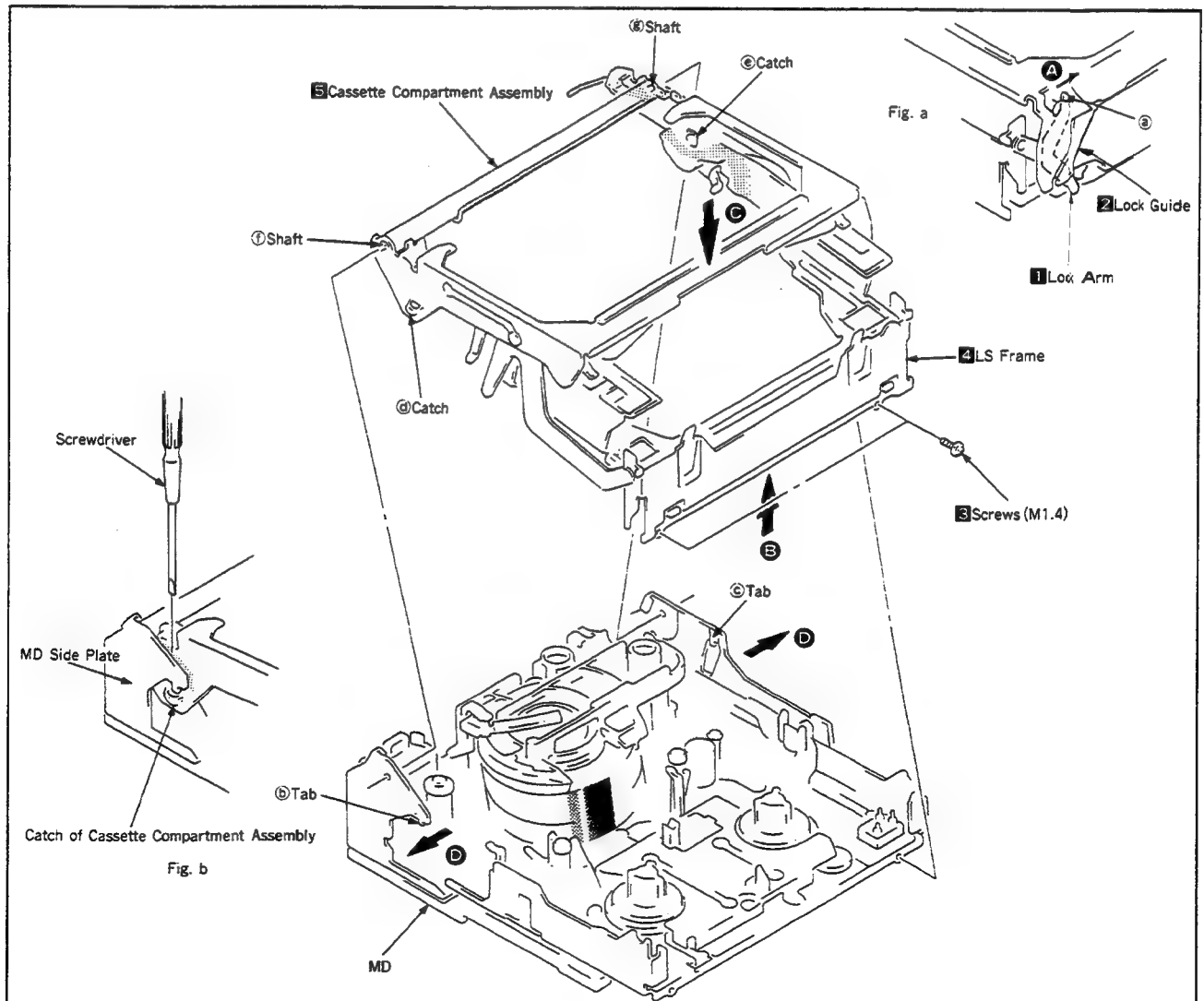


Fig. 1

2. Mounting (Fig. 2)

- 1) Select the **USE** mode.
- 2) Draw the cassette holder **6** of cassette compartment assembly **5** toward the arrow **E**, and lower the LS frame **4** toward the arrow **F**.
- 3) With the cassette compartment assembly **5** tilted by about 45° against MD, insert shafts **1** and **8** of cassette compartment assembly into holes **h** and **i** of MD side plate respectively.

At this time, the part **1** of torsion bar must be positioned on the side **k** of LS flexible board (FP-443) (not on the side **1**), as shown in Fig. c.

- 4) Holding holes **h** and **i** of MD side plate, press the cassette compartment assembly **5** so that its catches **d** and **e** are

engaged with tabs **b** and **c** of MD side plate. In such a case, the lock arm **1** of cassette compartment assembly must be inserted into a groove in the guide rail **7** on the MD side plate as shown in Fig. d.

- 5) Insert left and right side plates **m** and **n** of LS frame **4** inside the LS chassis **3**.
- 6) Push down the cassette compartment to lock.

Note : Make sure that the shafts **1**, **8** and the tabs **b**, **c** are set in the MD side plate properly.

- 7) Tighten two screws **2**.

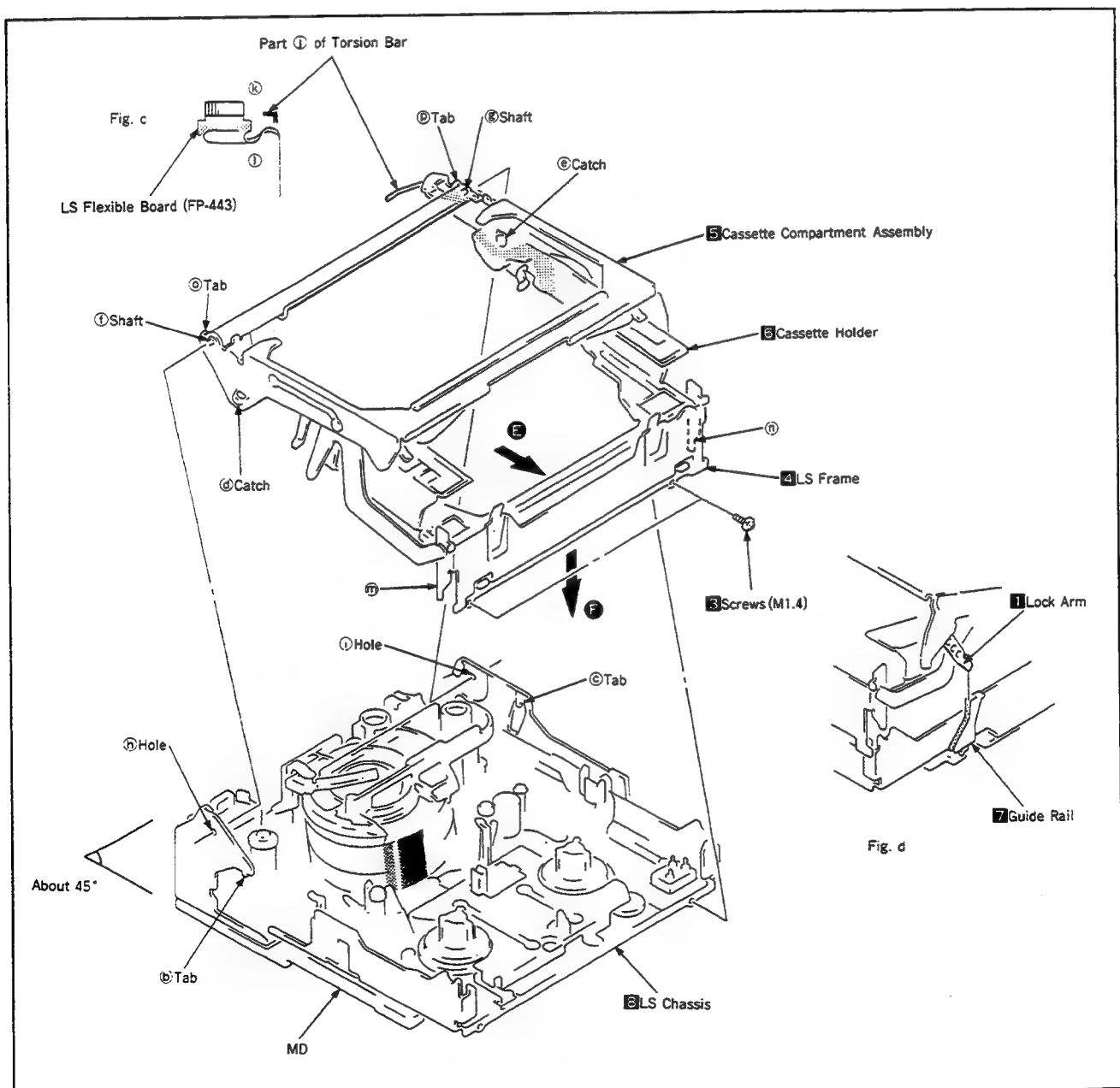


Fig. 2

**1-2. OPERATION WITH CASSETTE COMPARTMENT
ASSEMBLY REMOVED (Fig. 3)**

- 1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
- 2) Place the cap **2** on the Reflector C **1**.
- 3) Press the pin of the push switch **3** (ON state) and fix it with adhesive tape **4** in that state.

Note : Press the asterisk (*) pin to set the REC mode.
(This is not required for the other modes.)

- 4) Push the cassette compartment DOWN switch **5** in an arrow direction as shown in Fig. a.

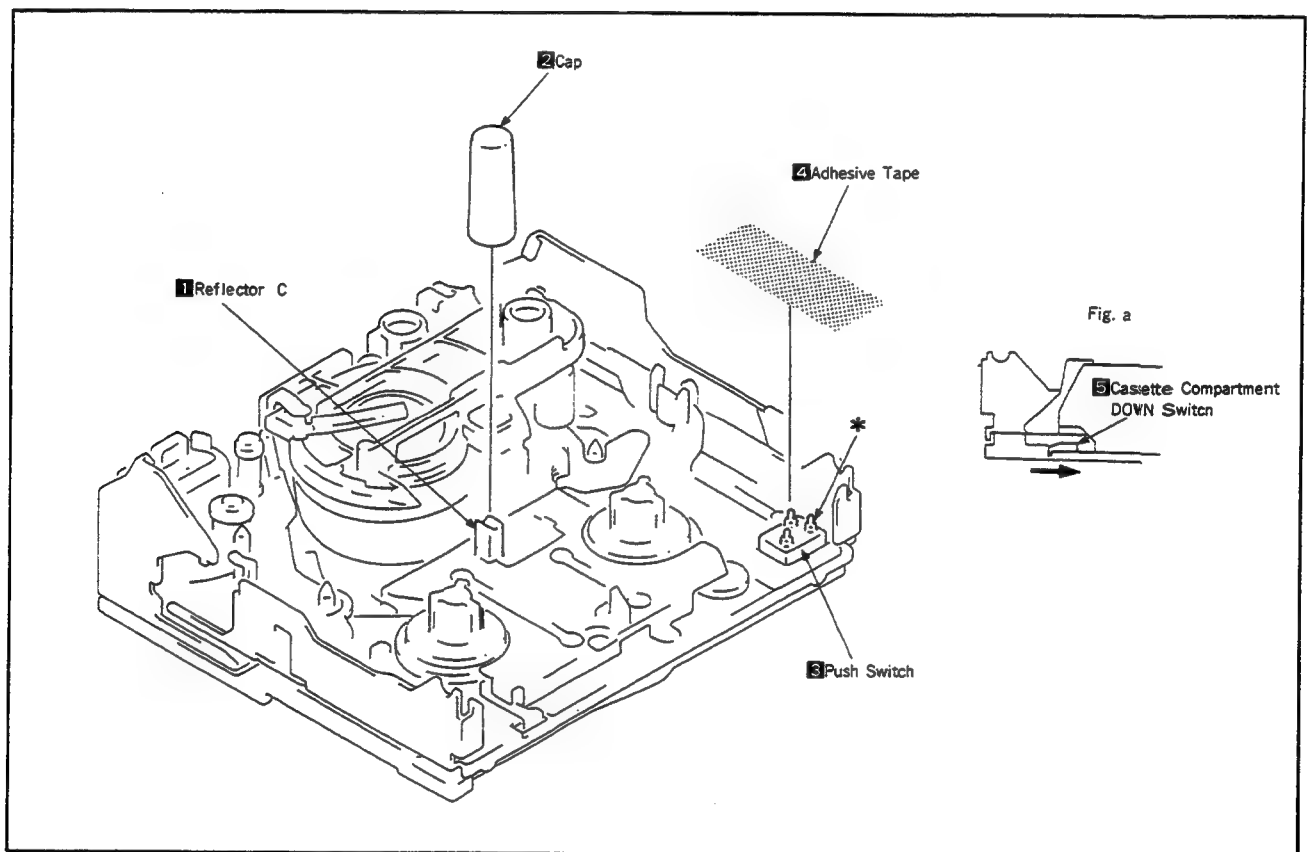


Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
U, U', FL, O, O' and A mechanisms have different mode indications respectively. Select your desired type. (Fig.4)

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

- 1) Insert the FP-425 flexible connector **1** and M-SW connector **2** into the mode selector IV conversion connector **3** respectively.

3. Handling

- 1) Use the M mode selector buttons only.
- 2) During mode selection, "BLANK" lights up when no mode is being selected.
- 3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY, TURN, REC and FF light up in that order.
- 4) When changing over from the FF mode back to the END mode, press the left M mode selector button to select your desired mode.

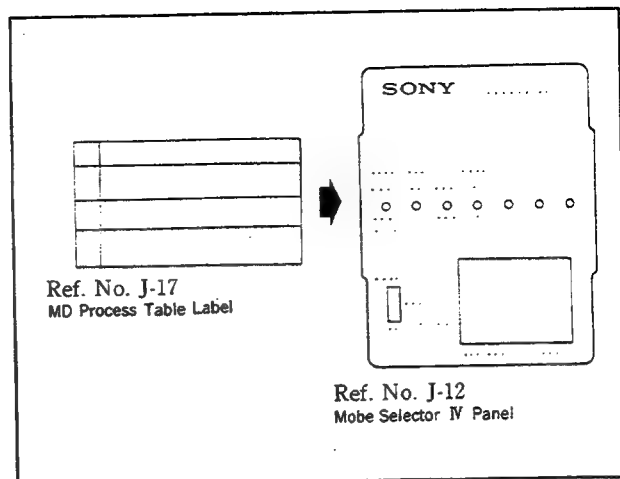


Fig. 4

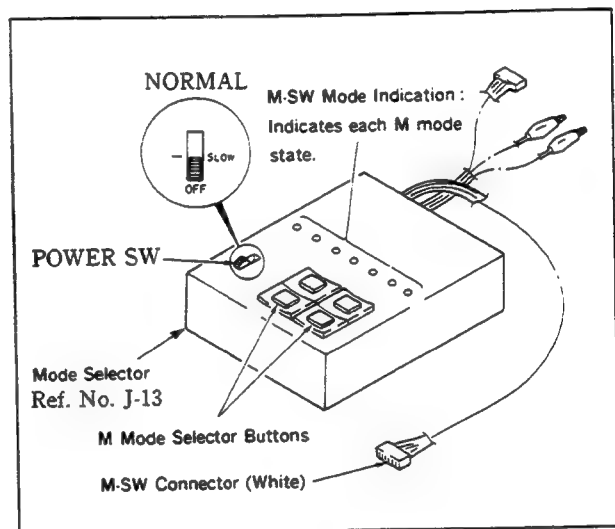


Fig. 5

For CCD-FX410 series

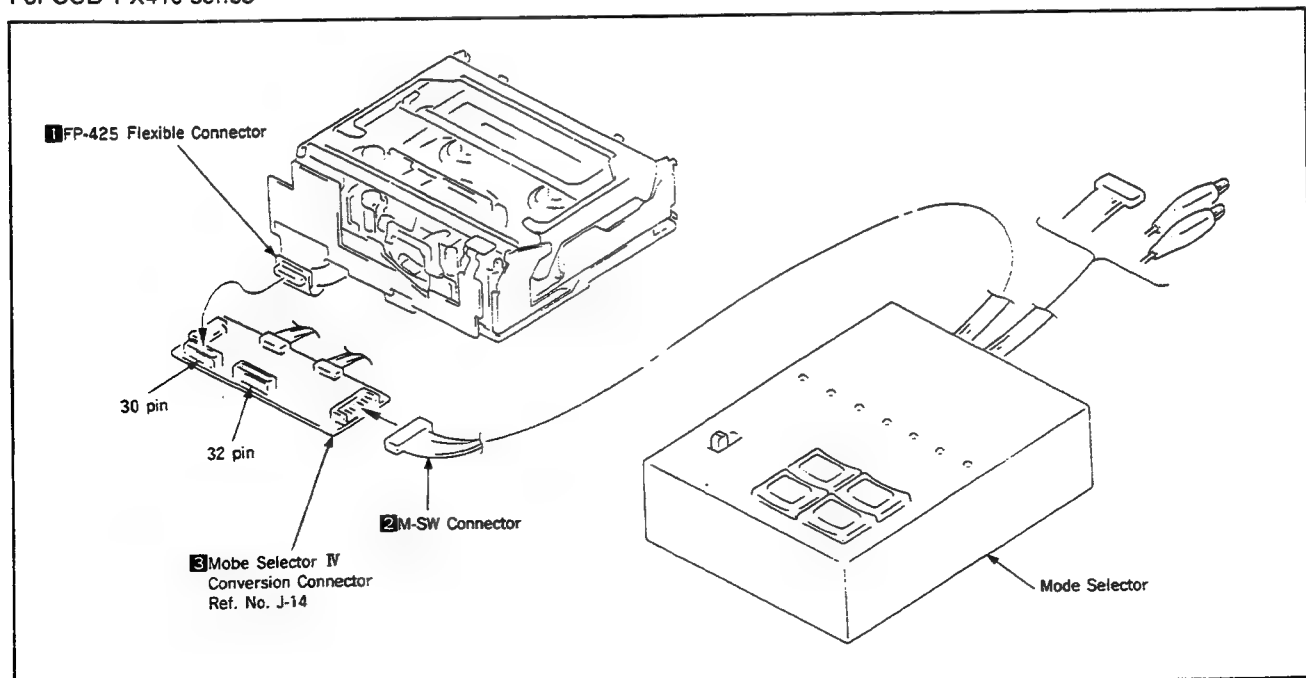
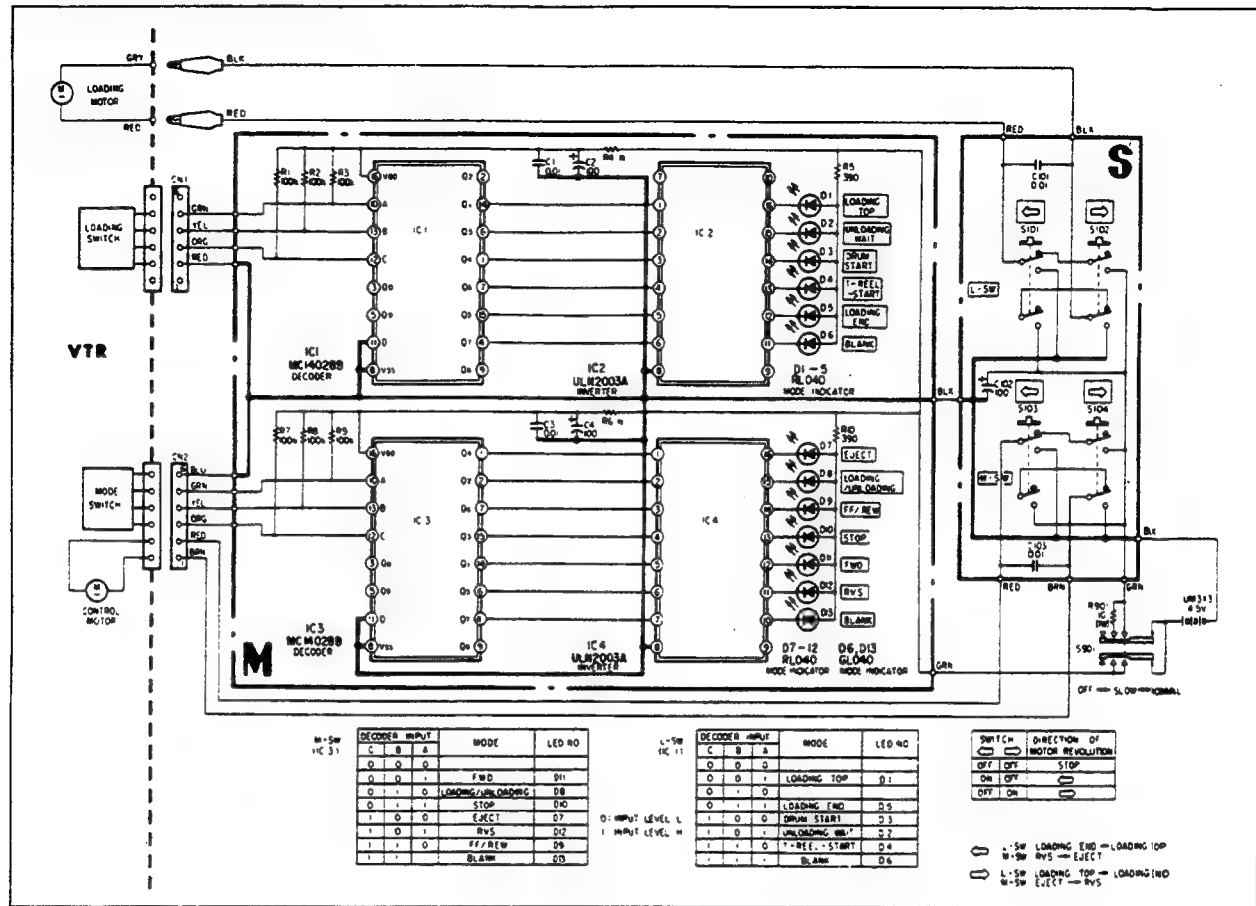


Fig. 6



1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description	Ref. No	Part No.	Description
CAPACITOR			IC		
C1	1-108-579-00	MILER 0.01 μ F 50V	IC1	8-752-240-28	IC TC4028BP
C2	1-123-333-00	ELECT 100 μ F 24V	IC2	8-752-120-03	IC μ PA2003C
C3	1-108-579-00	MILER 0.01 μ F 50V	IC3	8-759-240-28	IC TC4028BP
C4	1-123-333-00	ELECT 100 μ F 24V	IC4	8-759-120-03	IC μ PA2003C
C101	1-108-579-00	MILER 0.01 μ F 50V			
RESISTOR					
C102	1-123-333-00	ELECT 100 μ F 24V	R1	1-247-179-00	CARBON 100K 1/4W
C103	1-108-579-00	MILER 0.01 μ F 50V	R2	1-247-179-00	CARBON 100K 1/4W
			R3	1-247-179-00	CARBON 100K 1/4W
			R4	1-247-131-00	CARBON 1K 1/4W
			R5	1-247-121-00	CARBON 390 1/4W
D1	8-719-812-31	DIODE TLR123	R6	1-247-131-00	CARBON 1K 1/4W
D2	8-719-812-31	DIODE TLR123	R7	1-247-179-00	CARBON 100K 1/4W
D3	8-719-812-31	DIODE TLR123	R8	1-247-179-00	CARBON 100K 1/4W
D4	8-719-812-31	DIODE TLR123	R9	1-247-179-00	CARBON 100K 1/4W
D5	8-719-812-31	DIODE TLR123	R10	1-247-121-00	CARBON 390 1/4W
D6	8-719-812-33	DIODE TLG123A	R901	1-214-594-00	METAL 10 1W
D7	8-719-812-31	DIODE TLR123			
D8	8-719-812-31	DIODE TLR123			
D9	8-719-812-31	DIODE TLR123			
D10	8-719-812-31	DIODE TLR123			
D11	8-719-812-31	DIODE TLR123			
D12	8-719-812-31	DIODE TLR123			
D13	8-719-812-33	DIODE TLG123A			

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regardless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

- 1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly. Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

- 1) In the **USE** mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

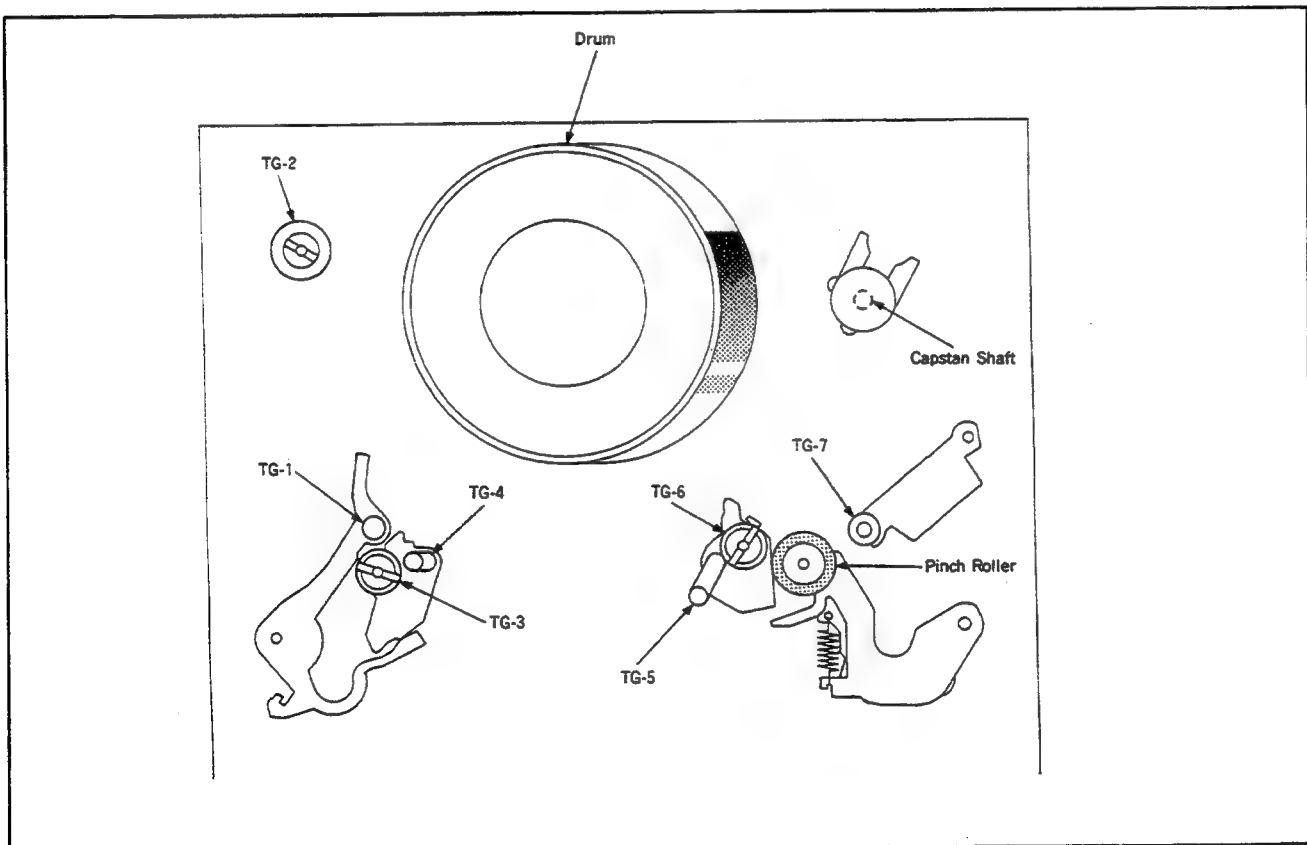


Fig. 7

2-3. PERILDIC CHECK ITEMS

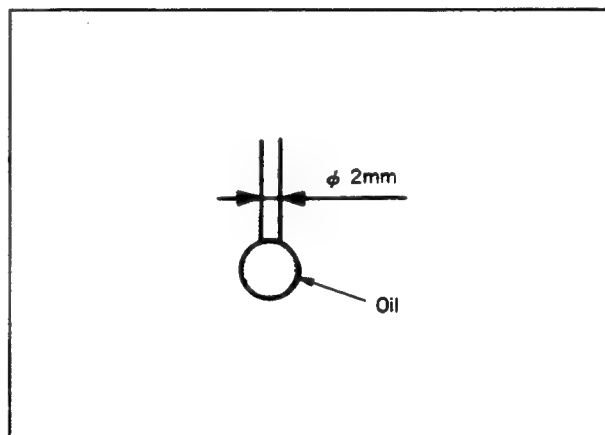
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans- portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degausing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be absolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil




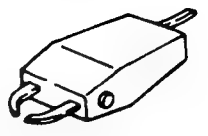
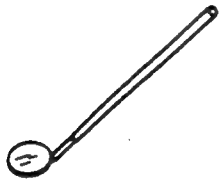
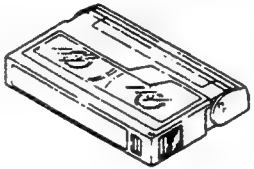
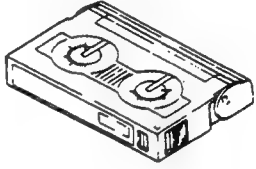

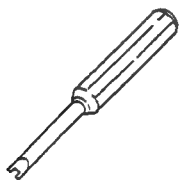
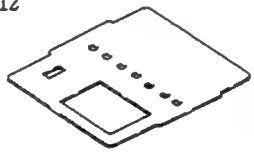
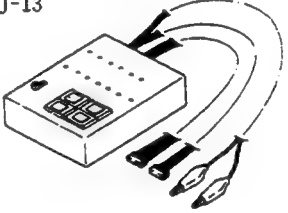
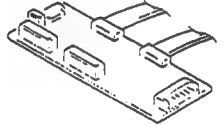
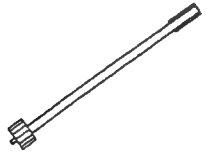
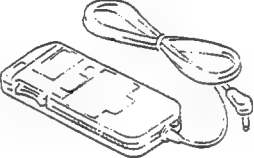
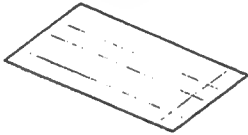
- Be sure to use specified oil. (If you use oil with different viscosity, etc., it may cause troubles.)
Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.



2-4. Service jigs list

Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector IV panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector IV conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment ● Oscilloscope
 ● Analog tester (20 kΩ)

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-9 	J-10  (Attached to the maintenance rotary upper drum)
J-11 	J-12 	J-13 	J-14 
J-15 	J-16 	J-17 	

3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Remove a screw **1**.
- 3) Remove the Retainer, Gooseneck assembly **2**.

2. Mounting

- 1) Mount the Retainer, Gooseneck assembly **2** with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
- 2) Tighten the screw **1**.
- 3) Referring to 1-1, mount the cassette compartment assembly.

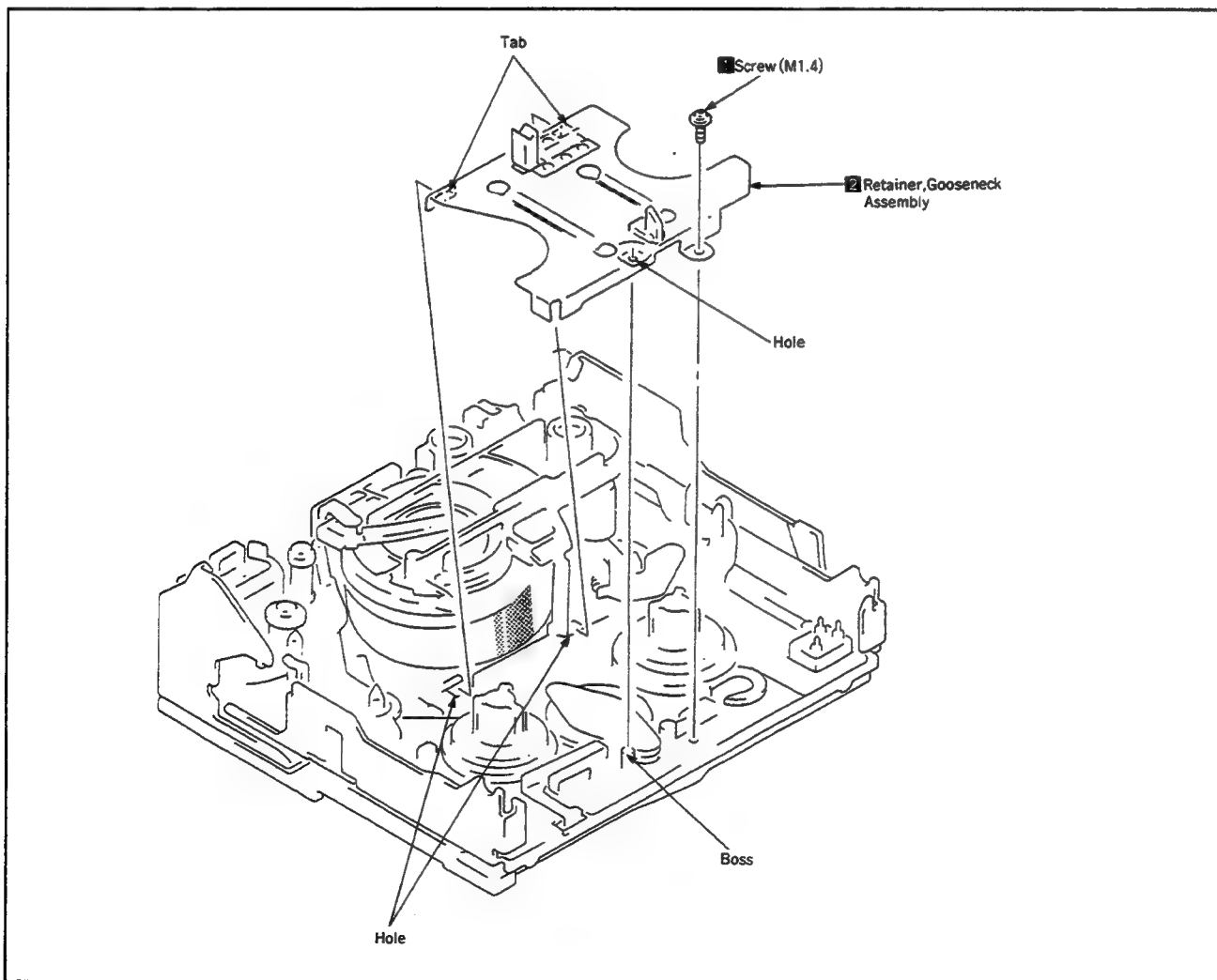


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Remove two screws **1**, then the protector base assembly **2**.

2. Mounting

- 1) Mount the protector base assembly **2** with its three holes engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder **3**.
- 2) Tighten two screws **1**.
- 3) Referring to 1-1, mount the cassette compartment assembly.

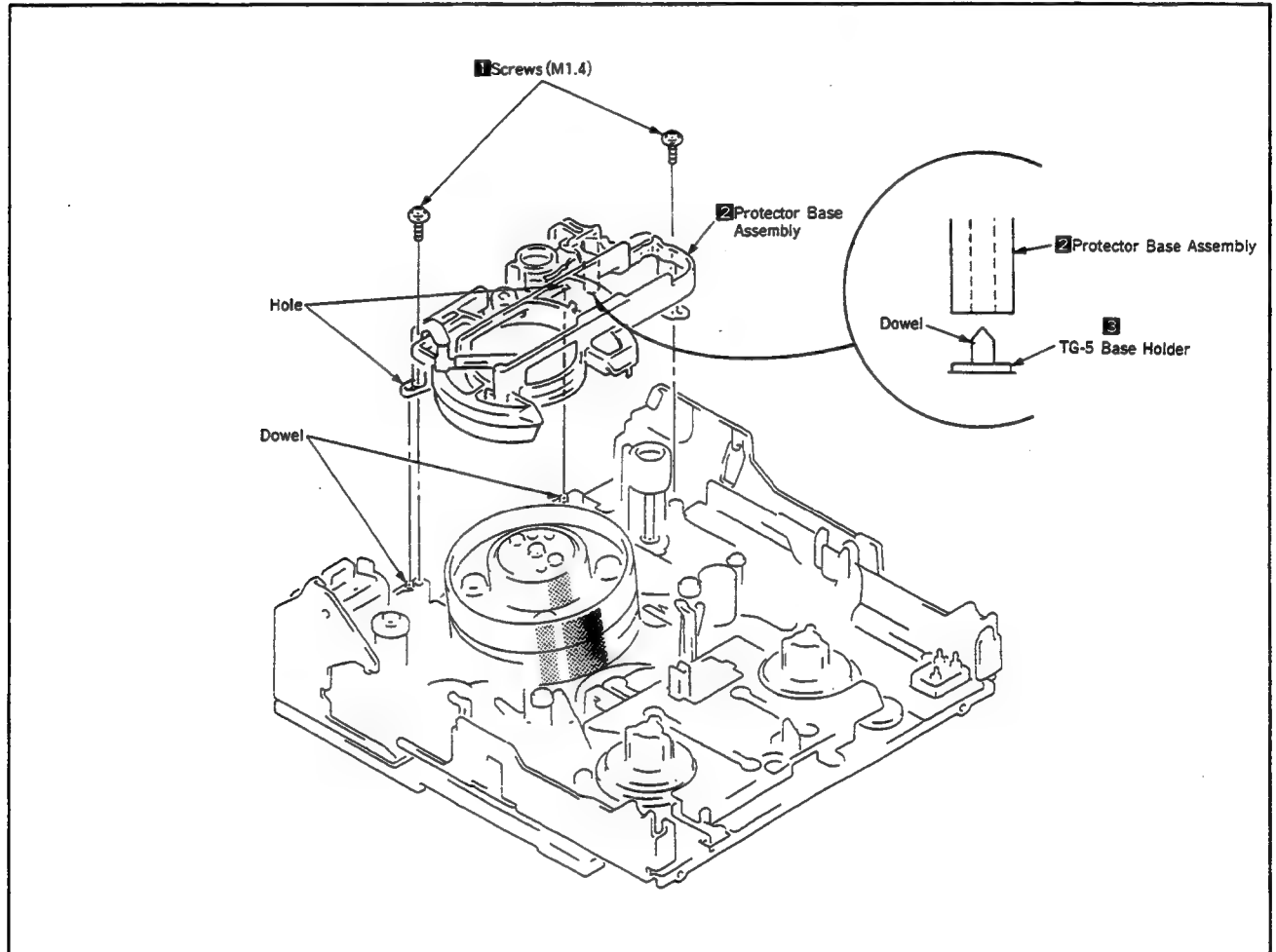


Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-2, remove the protect base assembly.
- 3) Disconnect the connector of FP-444 flexible board **1** on the back of MD.
- 4) Remove three screw **2**, then the drum assembly **3**.

Note : Do not touch the outer surfaced of drum (hold portions **A** and **B** of drum).

2. Mounting

- 1) Mount the drum assembly **3** while aligning with two dowels **a** of chassis.

Note : Do not touch the outer surfaced of drum (hold portions **A** and **B** of drum).

- 2) Tighten three screw assemblies **2** in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

- 3) Apply a screw locking agent to prevent screws from loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

- 4) Connect the connector of FP-444 flexible board **1** on the back of MD.

- 5) Referring to 3-2, mount the protect base assembly.

- 6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

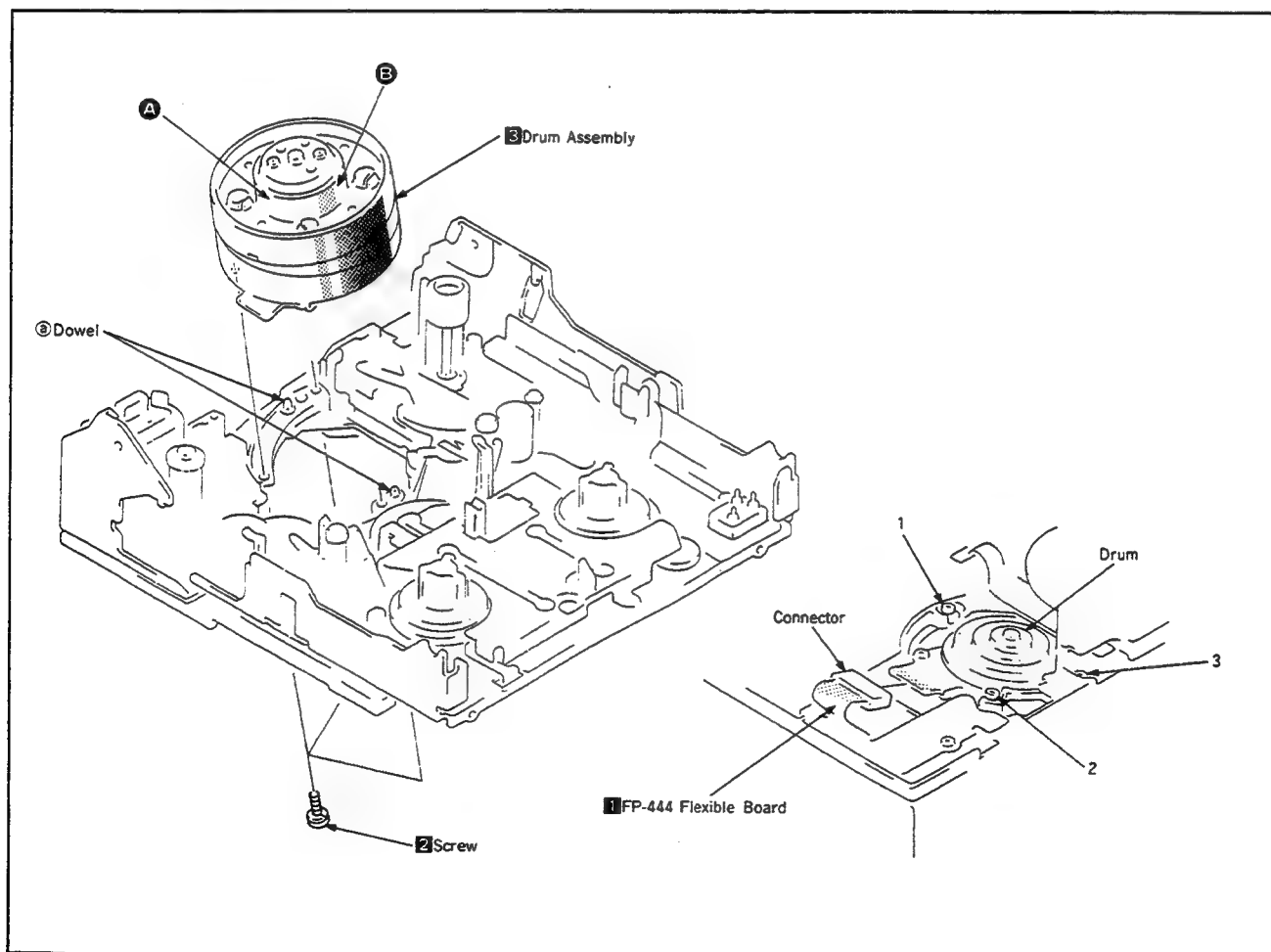


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Remove two screw **1**, then the capstan cover **2**.
- 3) Remove the screw **3**, then the capstan motor assembly **4**.

2. Mounting

- 1) Mount the capstan motor assembly **4** and tighten the screw **3**.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

- 2) Mount the capstan cover **2** and tighten two screws **1**.
- 3) Referring to 1-1, mount the cassette compartment assembly.

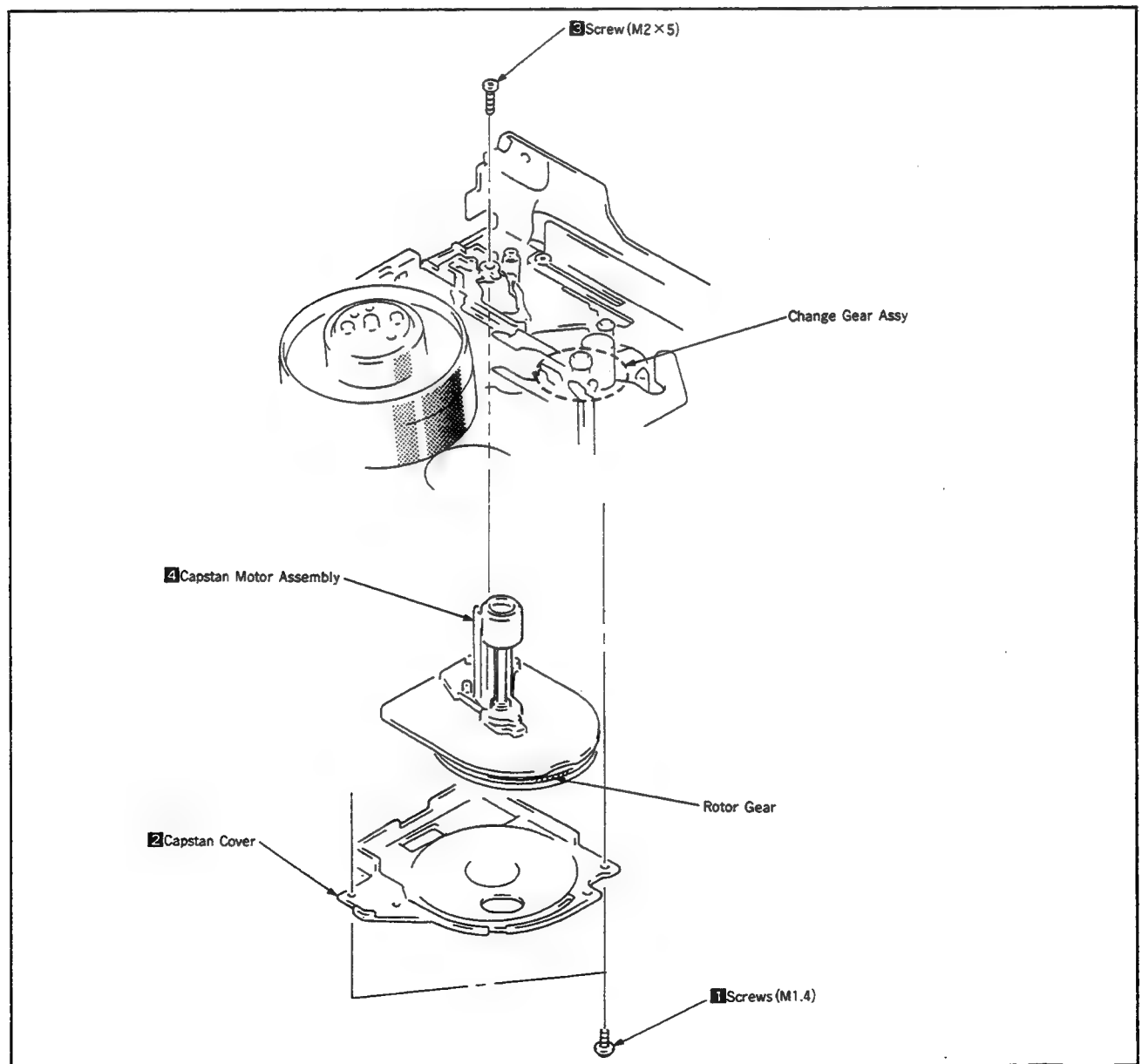


Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Remove the take-up reel table assembly **1**.
- 4) Remove the T soft assembly **2**, then the T soft arm **3**.

2. Mounting

- 1) Mount the T soft arm **3** with its long hole **©** engaged with the boss **④** of LS chassis.
- 2) Mount the T soft assembly **2** with its tab **③** engaged with a square hole **⑥** of T soft arm, as shown in Fig. a.
- 3) Mount the take-up reel table assembly **1** and rotate it toward the arrow **A** to be latched with T hard claw.
- 4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 5) Referring to 1-1, mount the cassette compartment assembly.

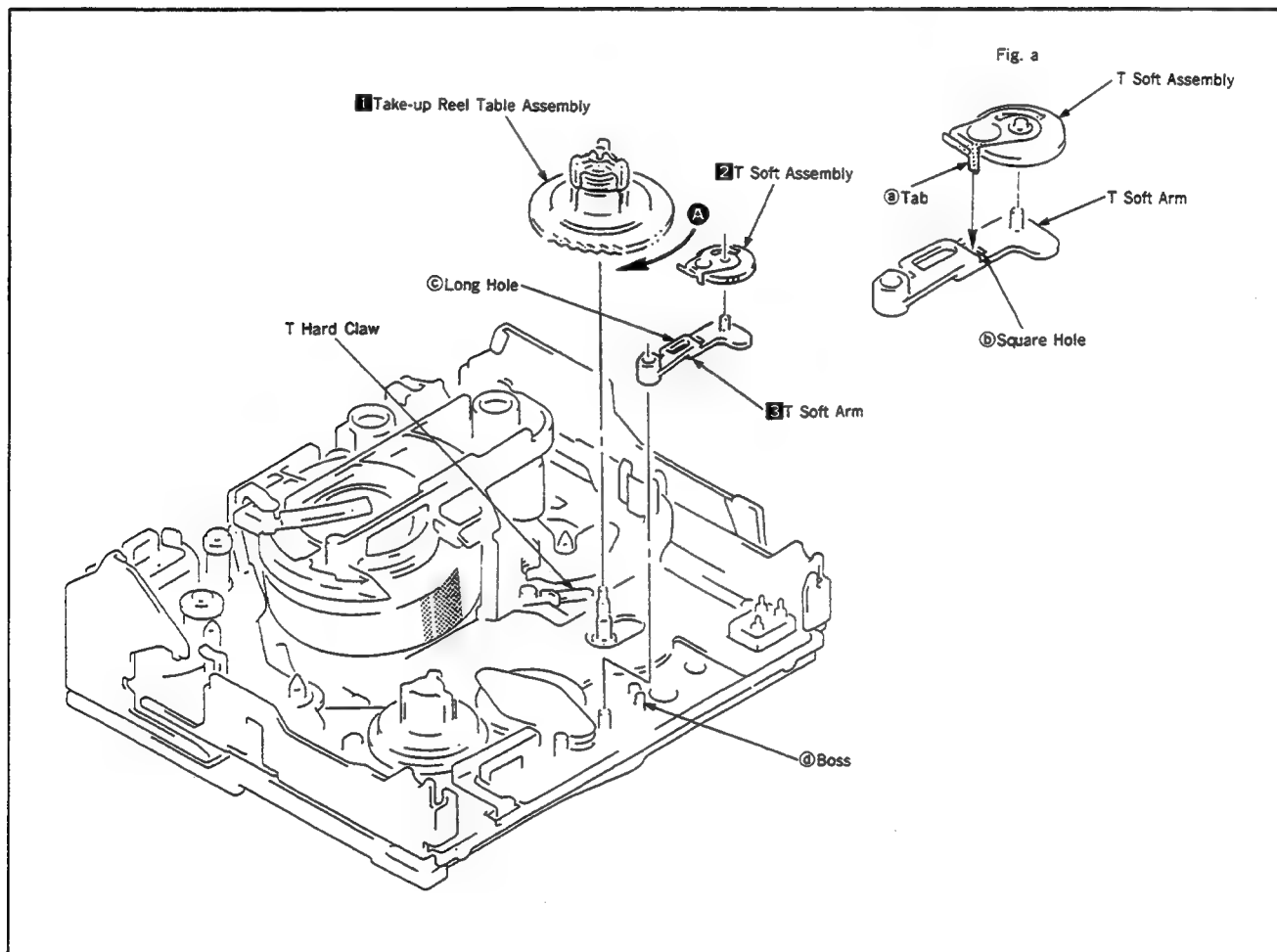


Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Select the **READY** mode.
- 3) Remove a washer **1**, then the pinch arm assembly **2**.

2. Mounting

- 1) Select the **READY** mode.
- 2) Hooking a spring of pinch arm assembly **2** to the cassette positioning boss on the chassis, mount the pinch arm assembly on the shaft of LS chassis assembly as shown in Fig. a.
- 3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
- 4) Mount the washer **1**.
- 5) Referring to 1-1, mount the cassette compartment assembly.

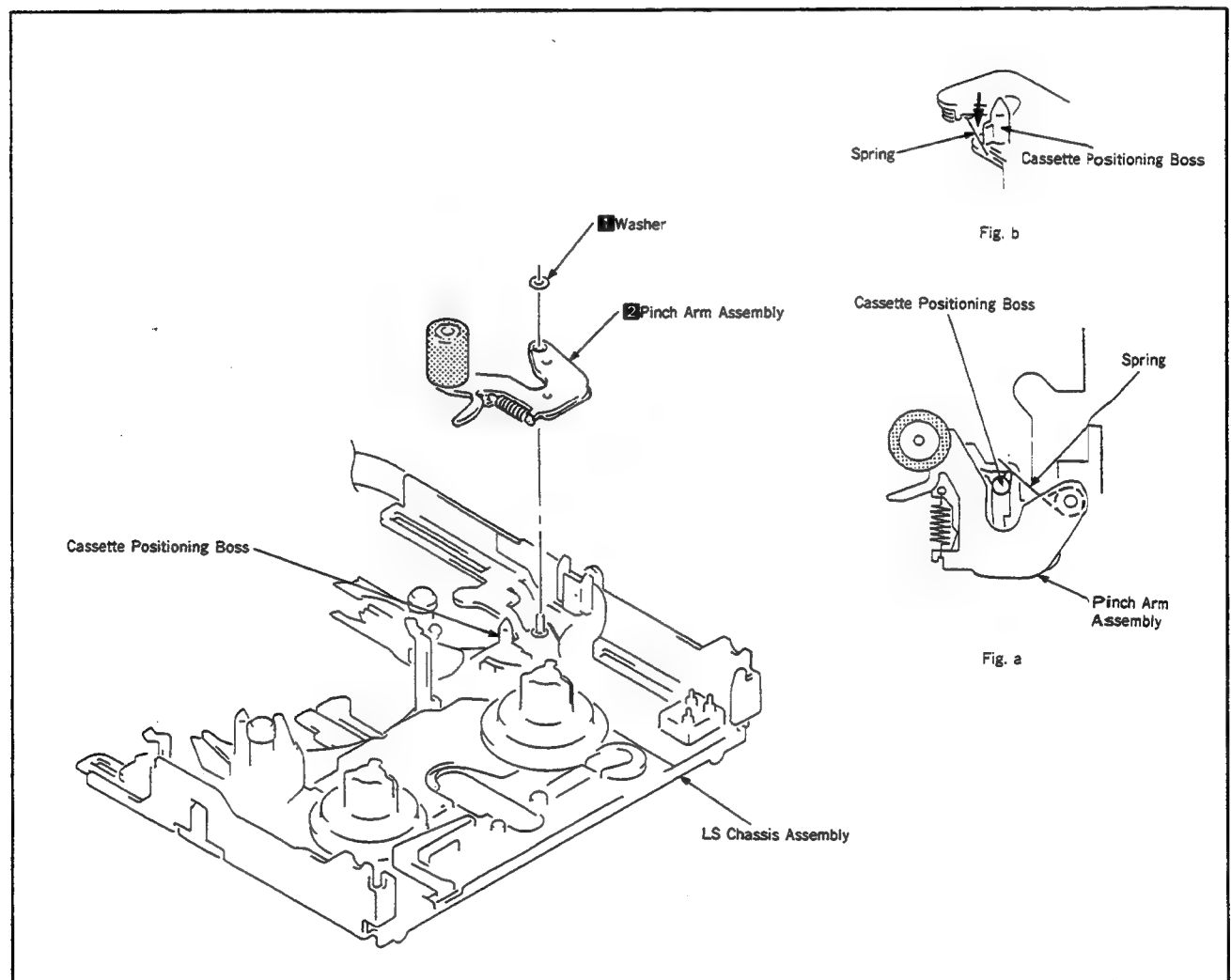


Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Remove a screw **1**, TG-5 base holder **2**, and LS flexible board **3**.
- 5) Remove a lock washer **4**, then the gooseneck assembly **5**.
- 6) Remove four screws **6**, then the LS chassis assembly **7**.

2. Mounting

- 1) Select the **USE** mode.
- 2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner **a** of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
- 3) Sliding the GL slider, align the top edge of long hole **b** in GL slider with the edge face **c** of LS chassis hole as shown in Fig. b.
- 4) Mount the LS chassis assembly **7** on the chassis.

Note : At this time, align a dowel **d** on LS chassis with a long hole **e** of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

- 5) Tighten four screws **6**.
- 6) Mount the LS flexible board **3** and TG-5 base holder **2**, then tighten the screw **1**.
- 7) Mount the Gooseneck assembly **5** and fix it with a washer **4**.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

- 8) Referring to 3-2, mount the protector base assembly.
- 9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 10) Referring to 1-1, mount the cassette compartment assembly.

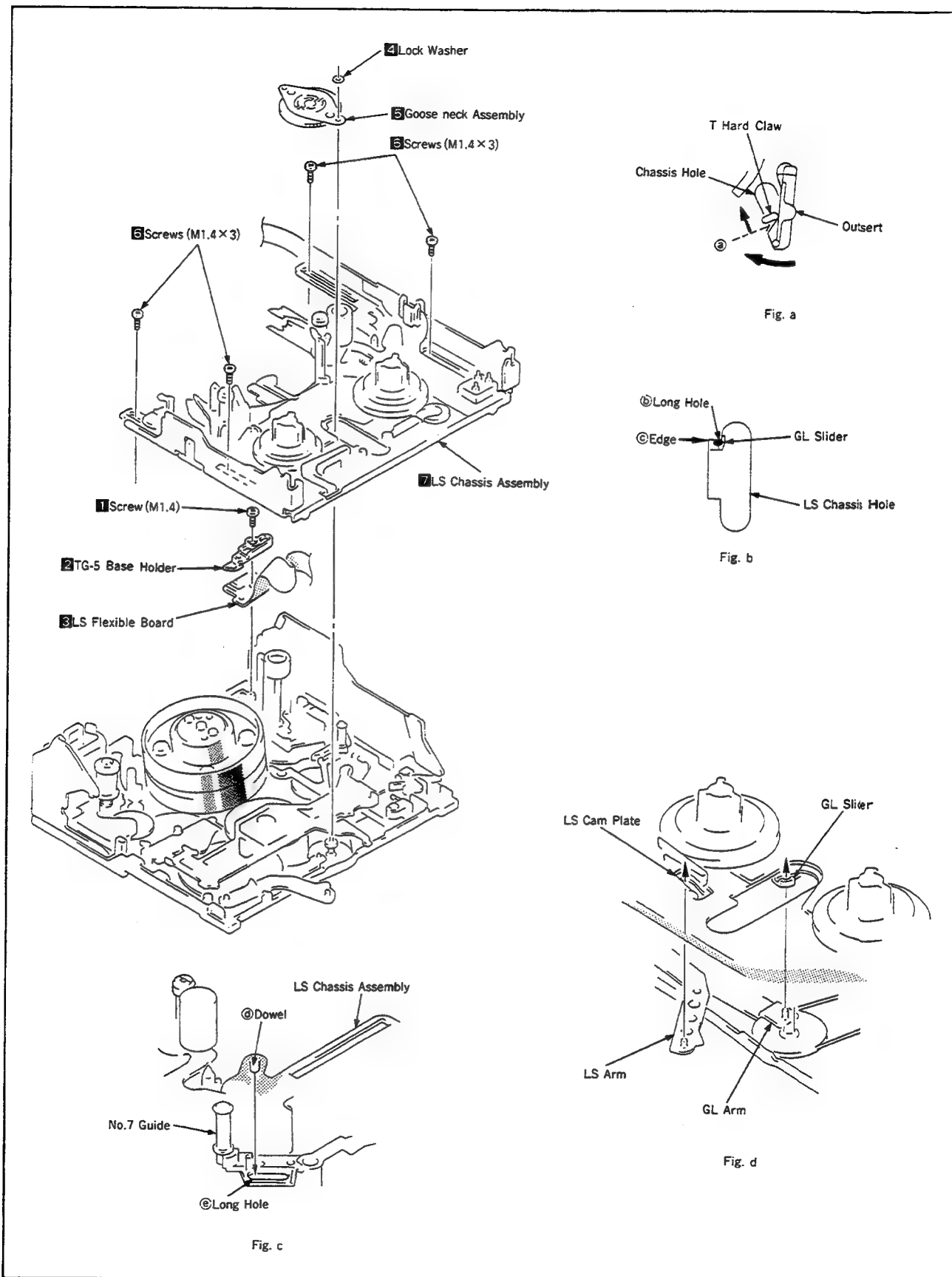


Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Push in the GL slider **1** toward the arrow **A**, and remove the guide base T assembly **2** and guide base S assembly **3** from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

- 6) Turning the guide base T assembly **2** and guide base S assembly **3** respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

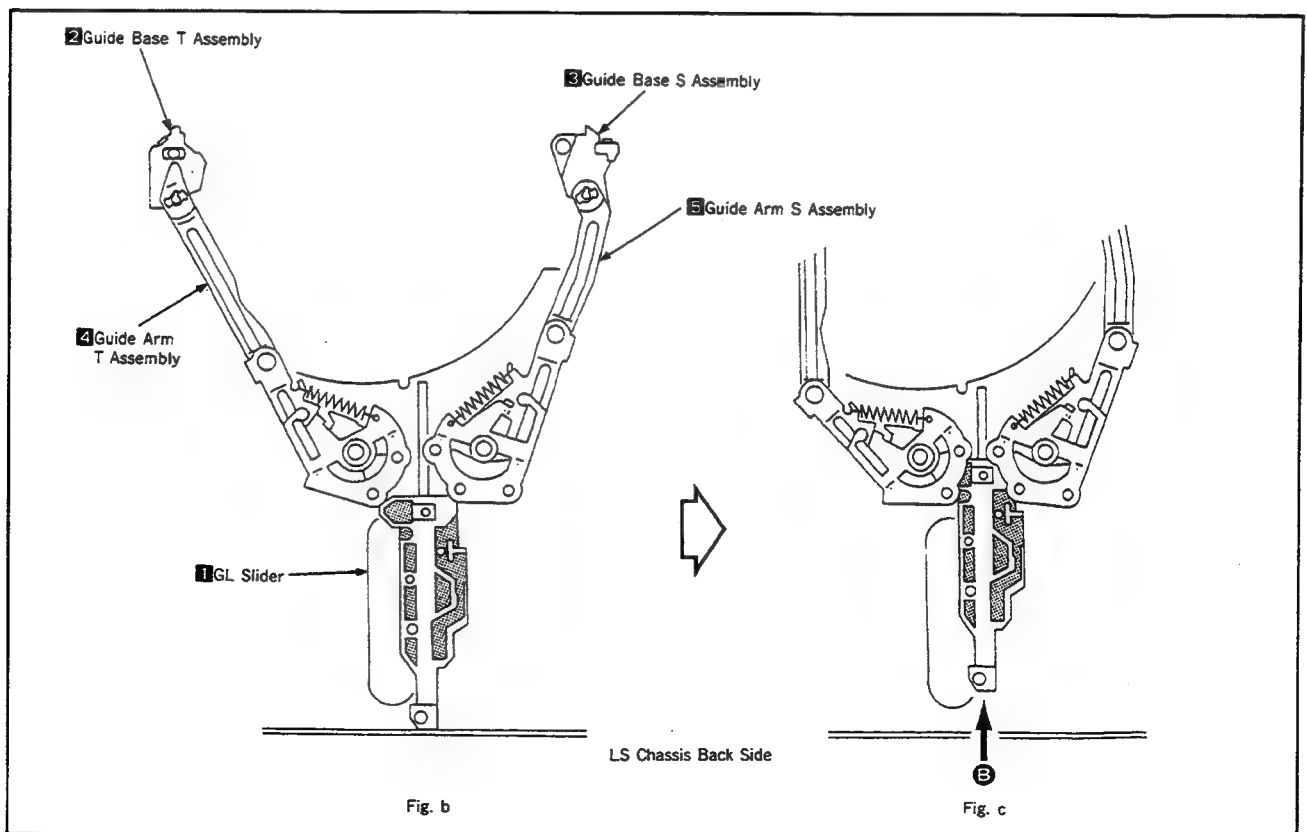
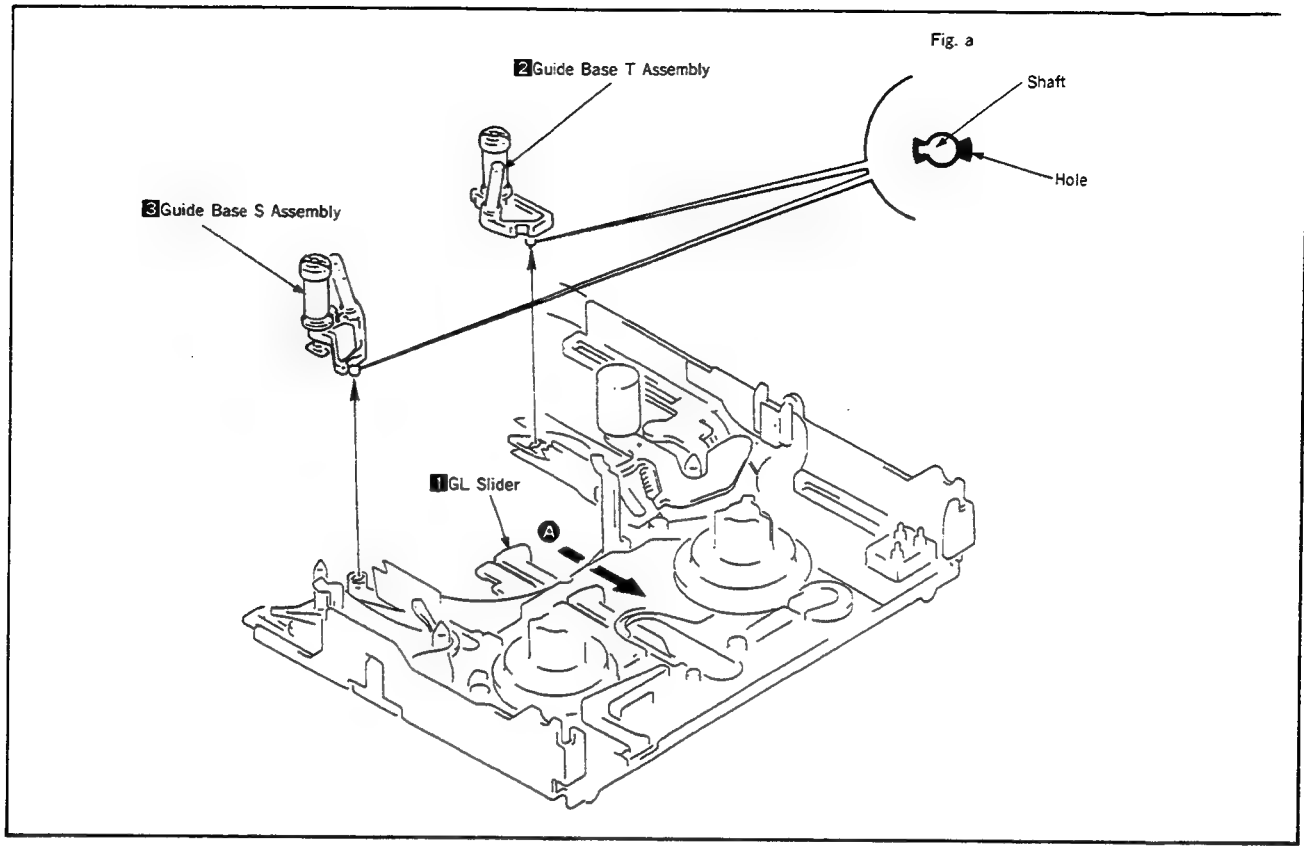
- 1) Turning the guide base T assembly **2** and guide base S assembly **3** respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
- 2) On the back side of chassis, insert the guide arm T assembly **4**, guide arm S assembly **5** and GL slider **1** from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly **2** and guide base S assembly **3** with the respective guide rails, push in the GL slider **1** toward the arrow **B** as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

- 6) Referring to 1-1, mount the cassette compartment assembly.



3. GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
- 6) Remove lock washers **1**, then the guide arm T assembly **2** and guide arm S assembly **3** respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmby, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

- 1) Mount the guide arm T assembly **2** and guide arm S assembly **3**, then fix them with a lock washer **1** respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

- 2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 6) Referring to 1-1, mount the cassette compartment assembly.

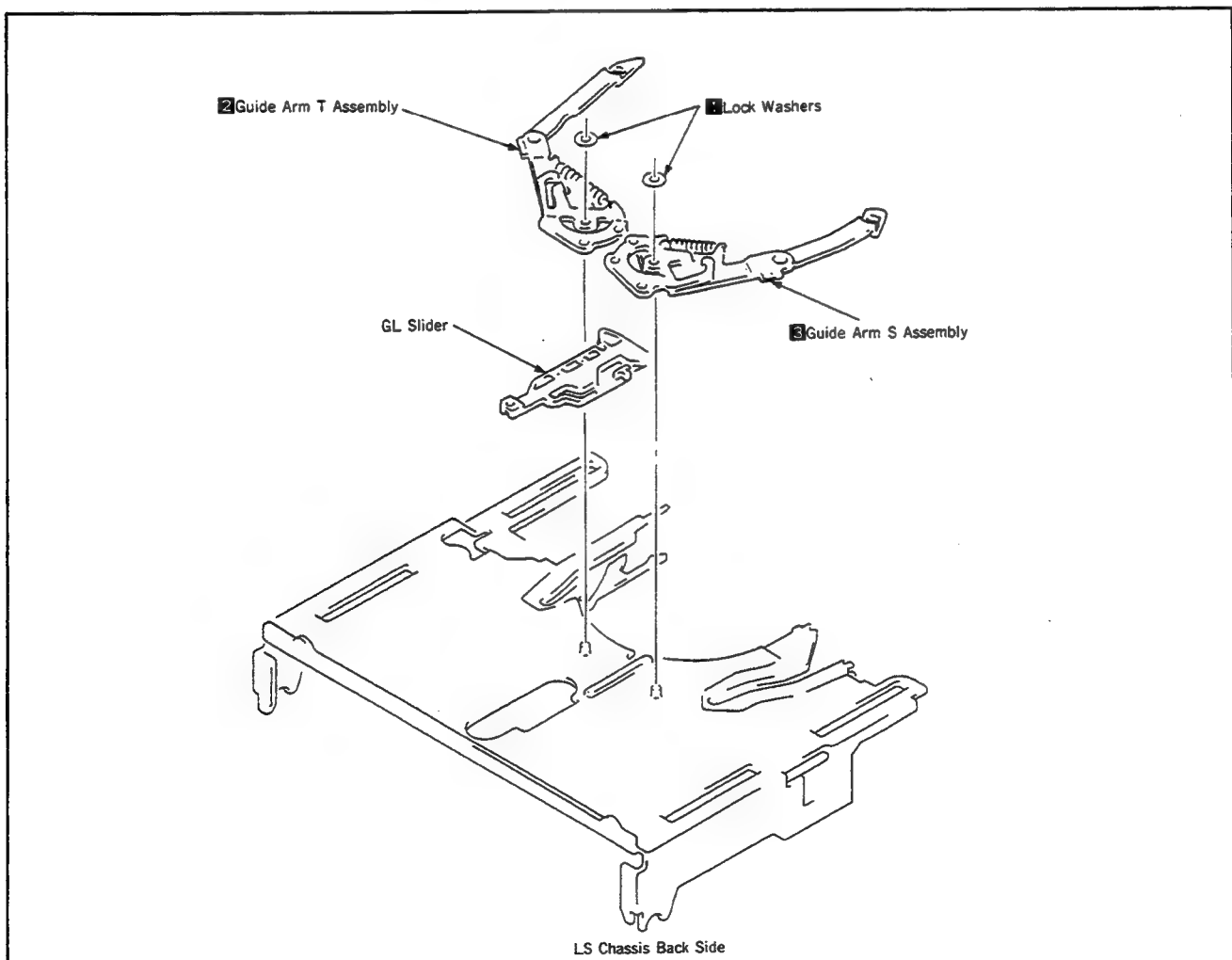


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-8, remove the guide base S assembly.
- 6) Remove a screw **1**, then the string **2** from the supply reel table assembly **3**. For easy removal of string block **4**, insert a flat-blade screwdriver into a groove **5** and push it up (Fig. a).
- 7) Remove the supply reel table assembly **3**.
- 8) Remove a tension coil spring **5**.
- 9) Turn the TG-1 arm assembly **6** up to a portion **7** of LS chassis hole in the arrow **A** direction so that its tab **8** can be disengaged (Fig. b).

2. Mounting

- 1) Pushing the S soft brake **7** toward the arrow **B**, mount the supply reel table assembly **3**.
- 2) Route the string **2** under the TG-1 arm assembly **6**, and insert the tab **8** of TG-1 arm assembly into the LS chassis hole **9**, then turn the TG-1 arm assembly in the reverse direction of arrow **A** (Fig. b).

- 3) Wind the string **2** along the groove of supply reel table assembly **3** (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion : oil, otherwise the image will be distorted.

- 4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block **4** toward the arrow **C** and tighten the screw **1** (Fig. a).
- 5) Engage the tension coil spring **5** to the chassis hook.

Note : Confirm that the string **2** is surely wound around the groove of supply reel table assembly **3** (Fig. a).

- 6) Referring to 3-8, mount the guide base S assembly.
- 7) Referring to 3-7, mount the LS chassis assembly.
- 8) Referring to 3-2, mount the protector base assembly.
- 9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

- 10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

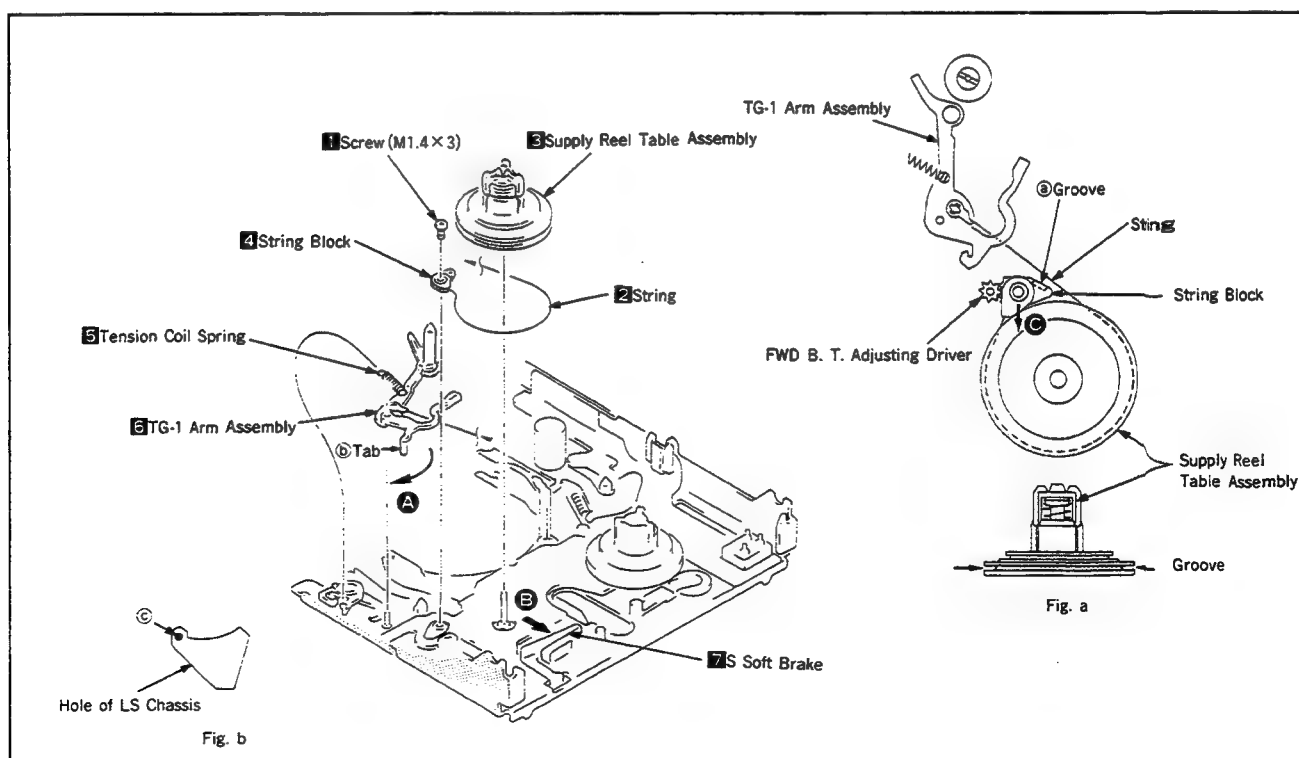


Fig. 18

3. TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

- 1) Remove the TG-2 roller assembly **1**.
- 2) Remove a compression coil spring **2**.

2. Mounting

- 1) Insert a compression coil spring **2** into the boss on chassis.
- 2) Rotate gently the TG-2 roller assembly **1** until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

- 1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to $3.3 \pm 0.05\text{mm}$.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

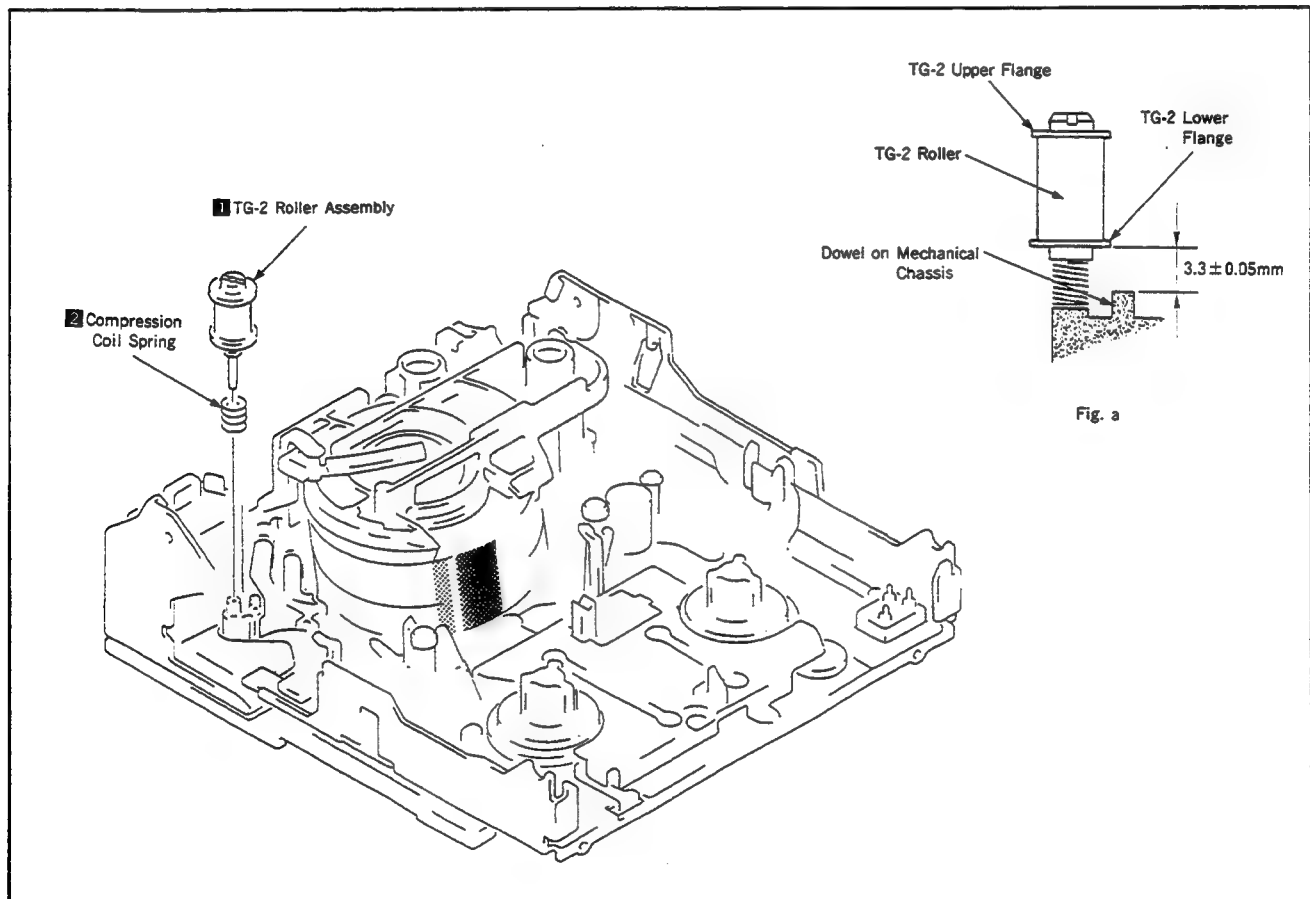


Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Raise a portion ③ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
- 6) Remove the TG-7 assembly ❷ from the shaft of mechanical chassis.

2. Mounting

- 1) Mount the TG-7 arm assembly ❷ to the shaft of mechanical chassis.
- 2) Mount the TG-7 arm Leaf spring ❶ to the mechanical chassis.
* Push in the tab of Leaf spring until it clicks into a detent of chassis (Fig. a).
- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

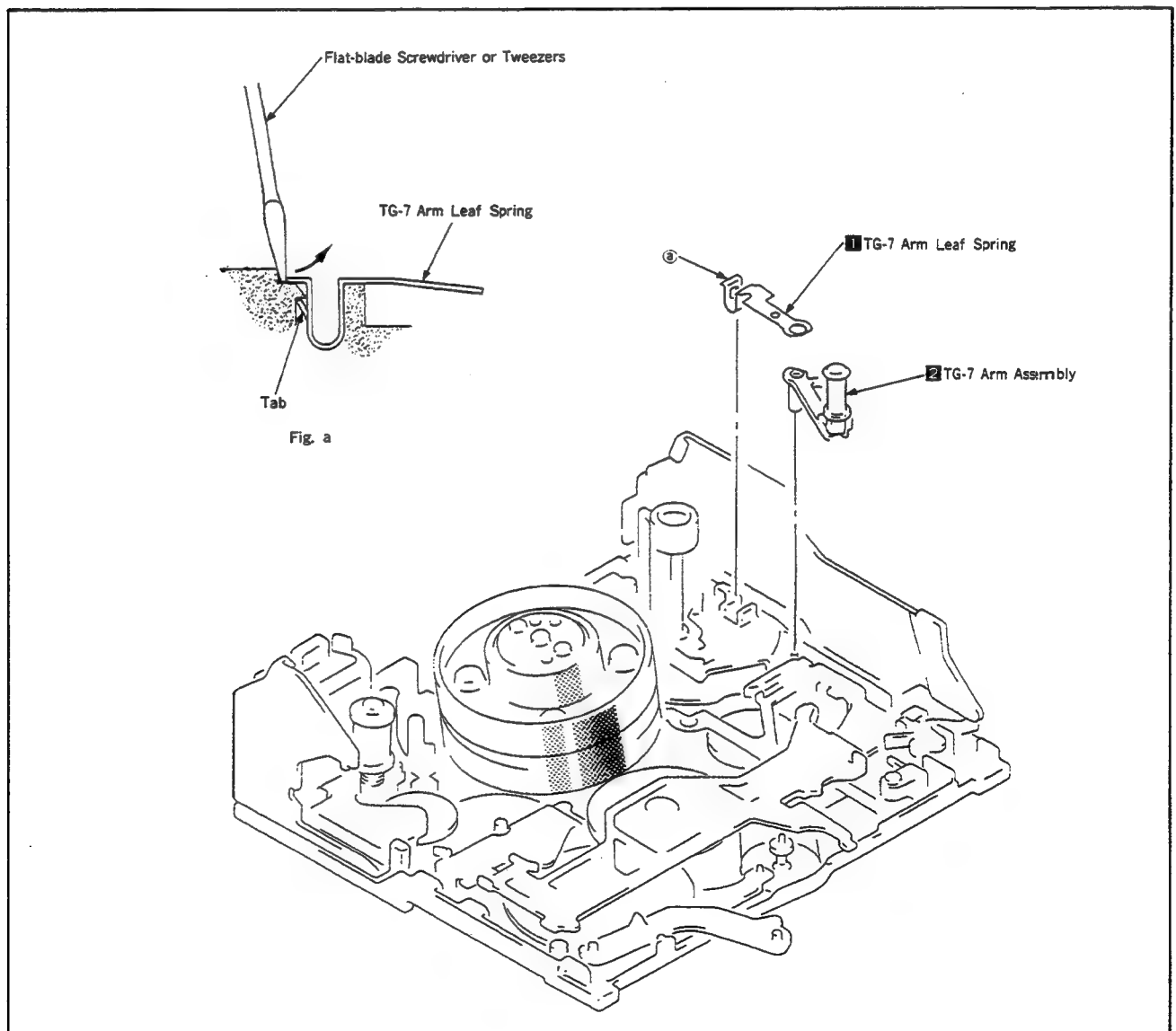


Fig. 20

3. LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Select the **LOAD** mode (at the position where the FF arm assembly is not above the screw **1**).
- 6) Remove two screws **1**, then the LM motor assembly **2**.

2. Mounting

- 1) Aligning the dowel **a** of LM motor assembly **2** with the hole **b** of mechanical chassis, mount the LM motor assembly with its hole **c** inserted into the mechanical chassis shaft **d**.
- 2) Tighten two screws **1**.
- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 6) Referring to 1-1, mount the cassette compartment assembly.

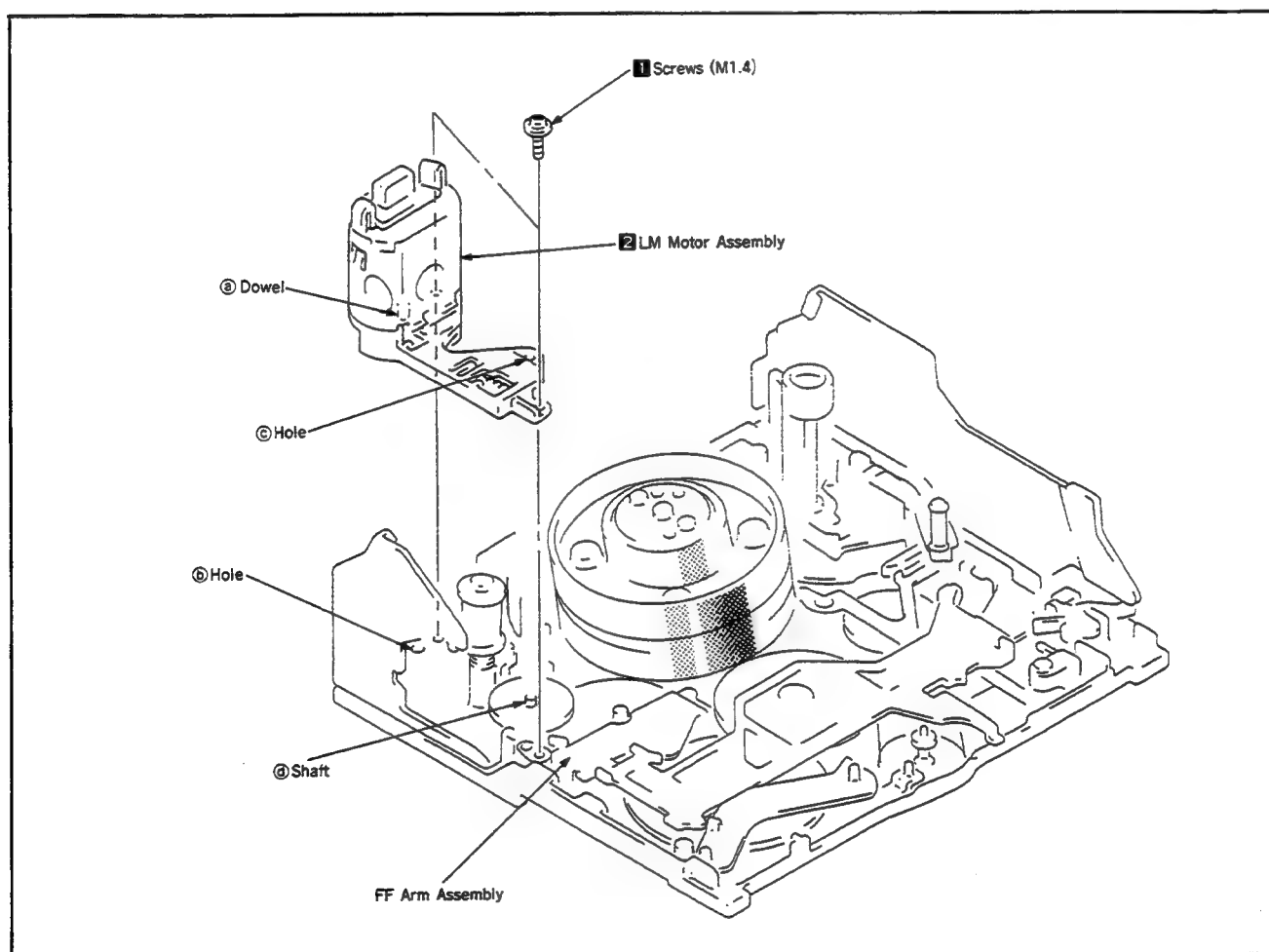


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Remove the LS arm **1** from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller **2**.

2. Mounting

- 1) Mount the LS arm **1** meeting with mechanical chassis sh. and cam groove.

Note : Move the LS arm **1** in arrow direction to confirm that the LS roller **2** is surely inserted.

- 2) Referring to 3-7, mount the LS chassis assembly.
- 3) Referring to 3-2, mount the protector base assembly.
- 4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 5) Referring to 1-1, mount the cassette compartment assembly.

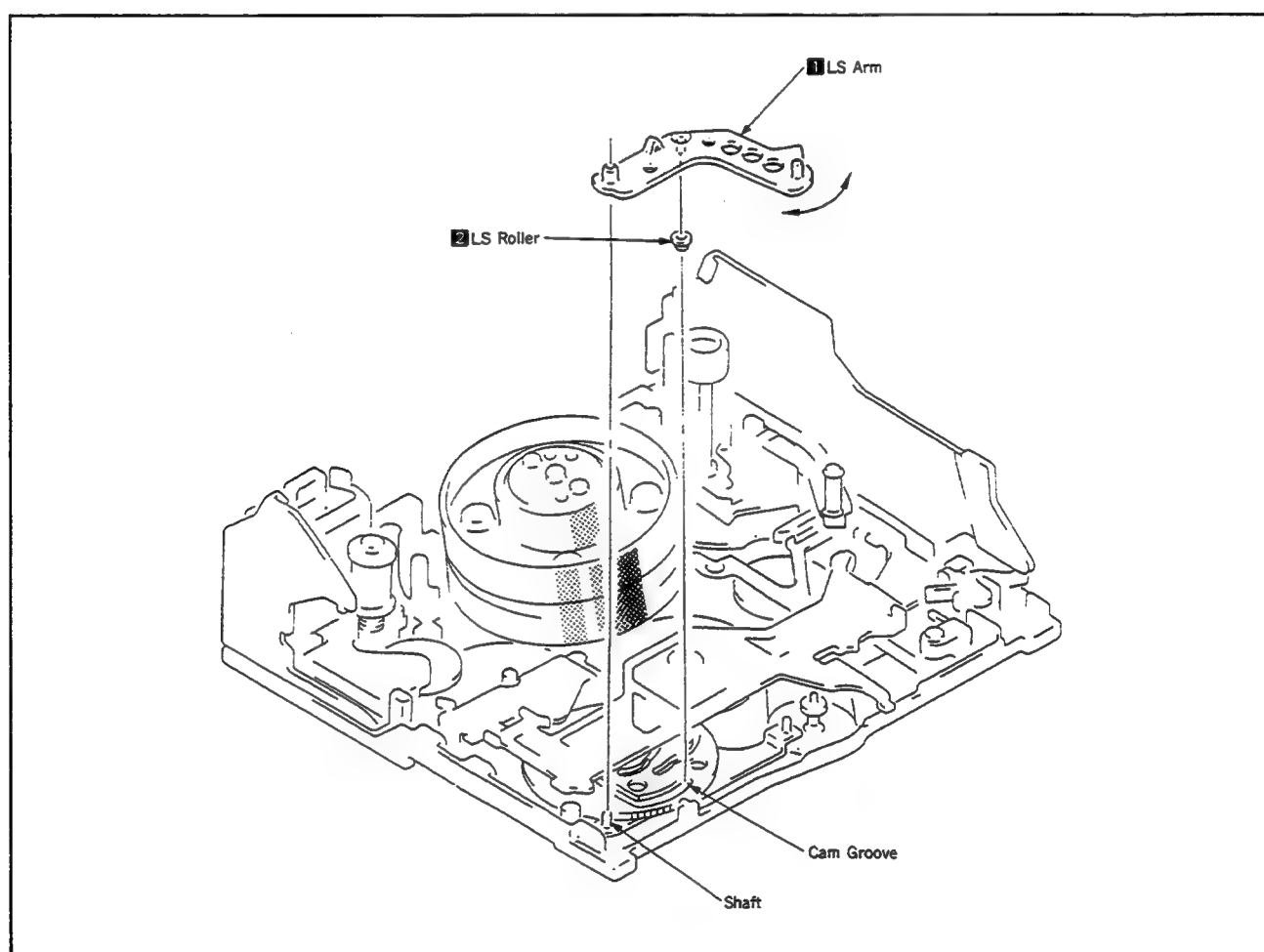


Fig. 22

M SLIDER ASSEMBLY (Fig. 23)

Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Remove two screws **1**, then the gear holder **2**.
- 6) Remove two lock washers **3**, then the M slider assembly **4**.

Mounting

- 1) Mount the M slider assembly **4**, aligning long holes **a** and **b** of M slider assembly with shafts **c** and **d** of mechanical chassis, and a long hole **e** with shaft **f** of press arm assembly, and also shaft **g** with outer groove **h** of cam respectively.
- 2) Mount two lock washers **3**.
- 3) Mount the gear holder **2** with its outserts **1** and **1** inserted into holes in the mechanical chassis.
- 4) Tighten two screws **1**.
- 5) Referring to 3-7, mount the LS chassis assembly.
- 6) Referring to 3-2, mount the protector base assembly.
- 7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 8) Referring to 1-1, mount the cassette compartment assembly.

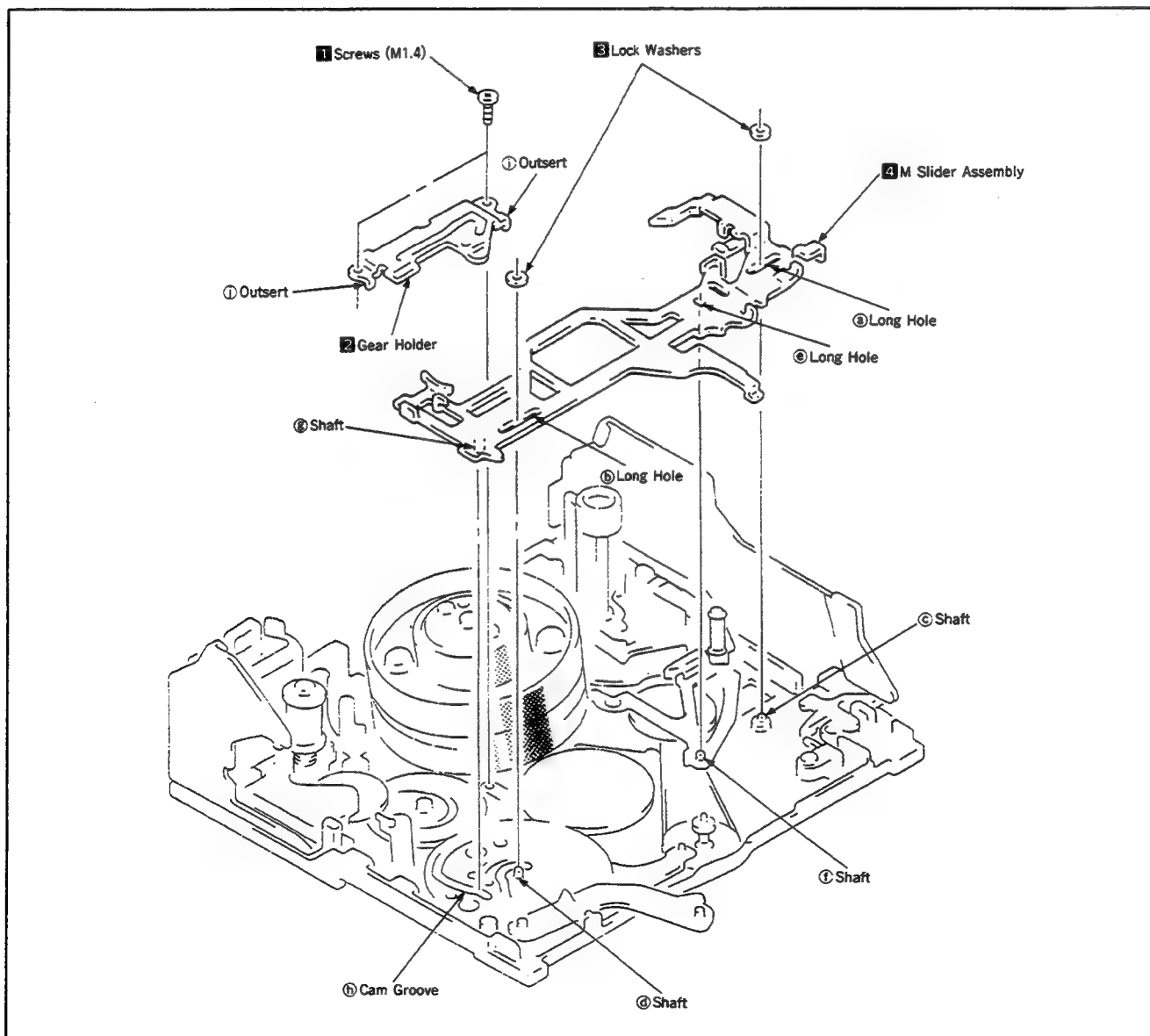


Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-3, remove the drum assembly.
- 5) Referring to 3-7, remove the LS chassis assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Remove a lock washer **1**, then pinch press arm assembly **2**.

2. Mounting

- 1) Mount the pinch press arm assembly **2**, inserting its shaft **3** into the cam groove **4** of HC drive arm, and hole **5** in the shaft **6** of mechanical chassis.
- 2) Mount the lock washer **1**.
- 3) After mounting, shift the pinch press arm assembly toward the arrow direction.
- 4) Referring to 3-15, mount the M slider assembly.
- 5) Referring to 3-7, mount the LS chassis assembly.
- 6) Referring to 3-3, mount the drum assembly.
- 7) Referring to 3-2, mount the protector base assembly.
- 8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 9) Referring to 1-1, mount the cassette compartment assembly.

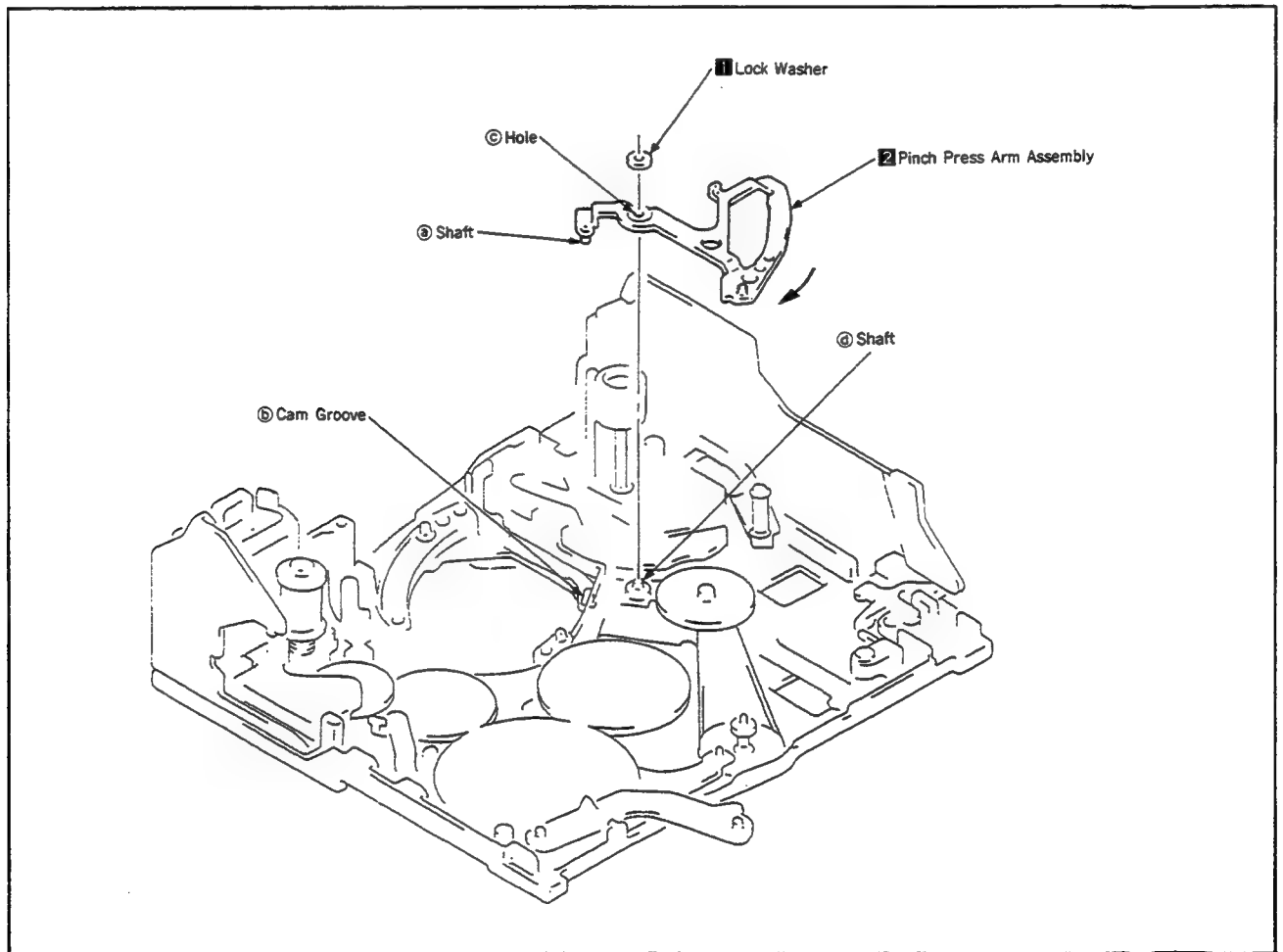


Fig. 24

7. CAM (Fig. 25)

Removal

- Referring to 1-1, remove the cassette compartment assembly.
- Referring to 3-1, remove the Retainer, Gooseneck assembly.
- Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-14, remove the LS arm assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Remove the cam **1**.

2. Mounting

- 1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

- 2) Mount the cam **1**, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time, make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarcely remains.

- 3) Mount the LM motor assembly.
- 4) Referring to 3-15, mount the M slider assembly.
- 5) Referring to 3-14, mount the LS arm assembly.
- 6) Referring to 3-7, mount the LS chassis assembly.
- 7) Referring to 3-2, mount the protector base assembly.
- 8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 9) Referring to 1-1, mount the cassette compartment assembly.

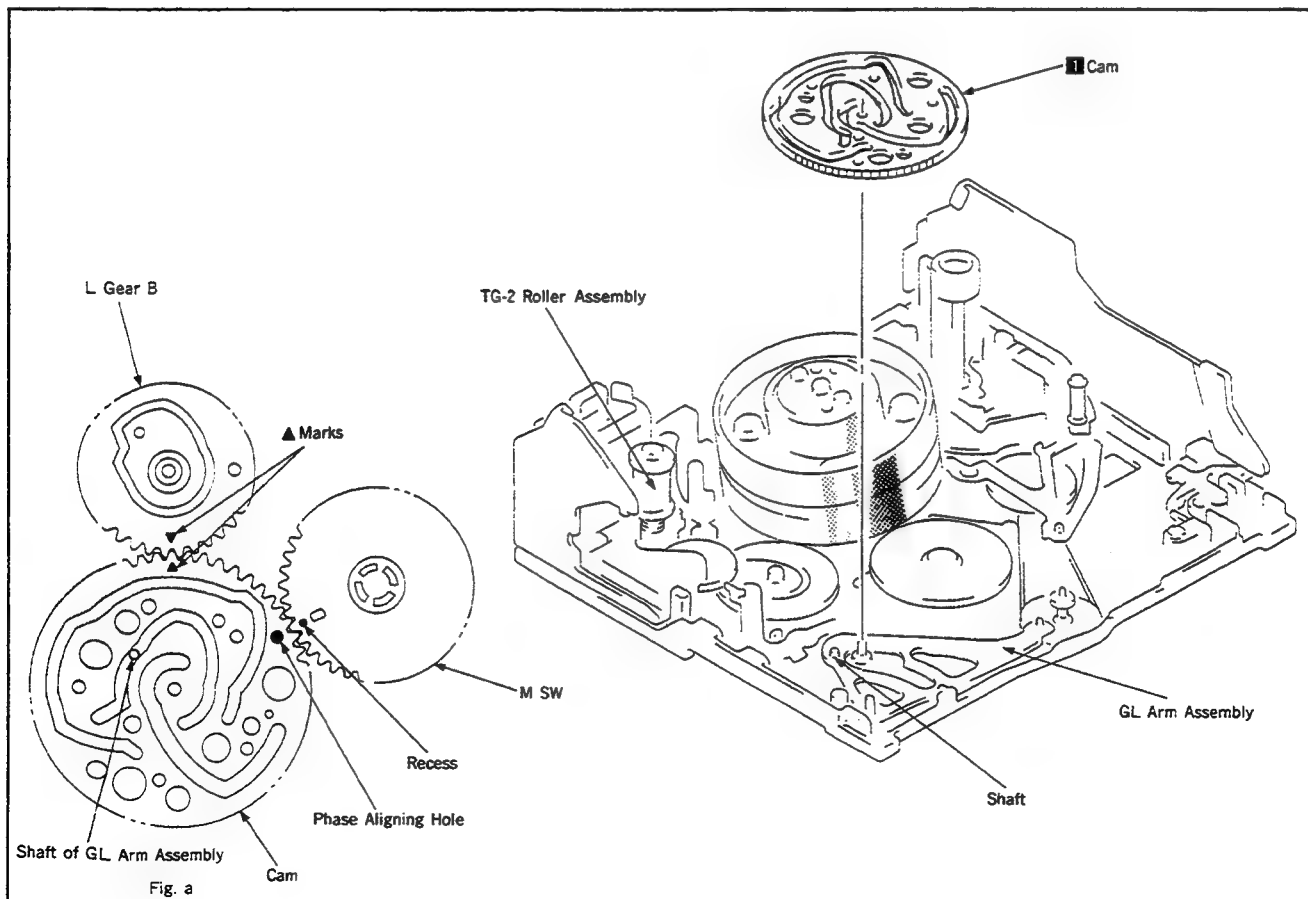


Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-14, remove the LS arm assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Referring to 3-17, remove the cam.
- 8) Remove the GL arm assembly **1**.

2. Mounting

- 1) Mount the GL arm assembly **1** with its hole **@** inserted in the shaft **Ⓟ** of mechanical chassis.
- 2) Referring to 3-17, mount the cam.
- 3) Referring to 3-15, mount the M slider assembly.
- 4) Referring to 3-14, mount the LS arm assembly.
- 5) Referring to 3-7, mount the LS chassis assembly.
- 6) Referring to 3-2, mount the protector base assembly.
- 7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 8) Referring to 1-1, mount the cassette compartment assembly.

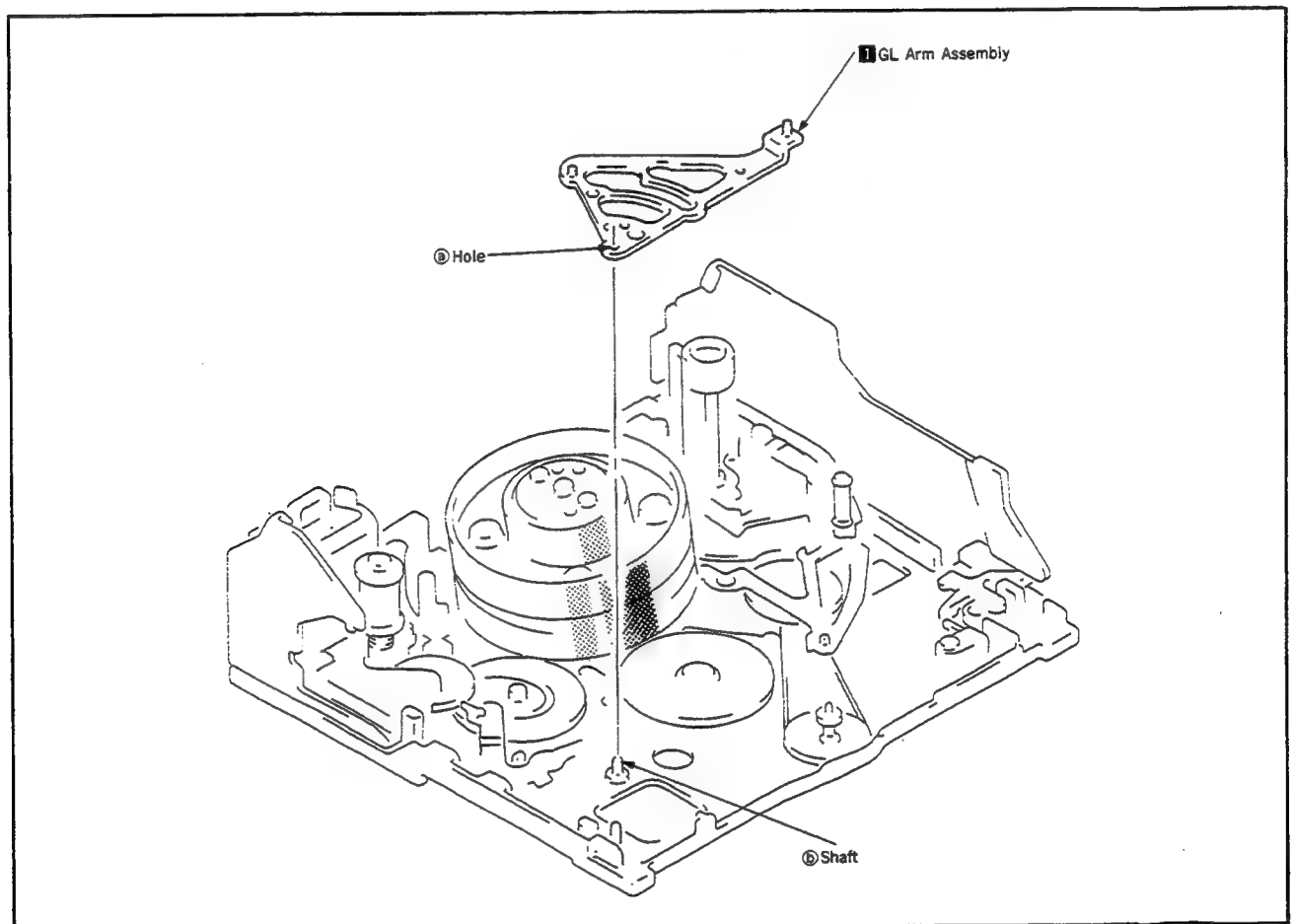


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-14, remove the LS arm assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Referring to 3-17, remove the cam.
- 8) Referring to 3-13, remove the LM motor assembly.
- 9) Remove the FF arm assembly **1**.
- 10) Remove the L gear A **2**.
- 11) Remove the L gear B **3**.

2. Mounting

- 1) Insert the L gear B **3** into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ②.)
- 2) Insert the L gear A **2** into the shaft of mechanical chassis.
- 3) Mount the FF arm assembly **1** with its two shafts inserted into the cam groove of L gear B **3** and the hole of mechanical chassis.
- 4) Referring to 3-17, mount the cam.
- 5) Referring to 3-13, mount the LM motor assembly.
- 6) Referring to 3-15, mount the M slider assembly.
- 7) Referring to 3-14, mount the LS arm assembly.
- 8) Referring to 3-7, mount the LS chassis assembly.
- 9) Referring to 3-2, mount the protector base assembly.
- 10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 11) Referring to 1-1, mount the cassette compartment assembly.

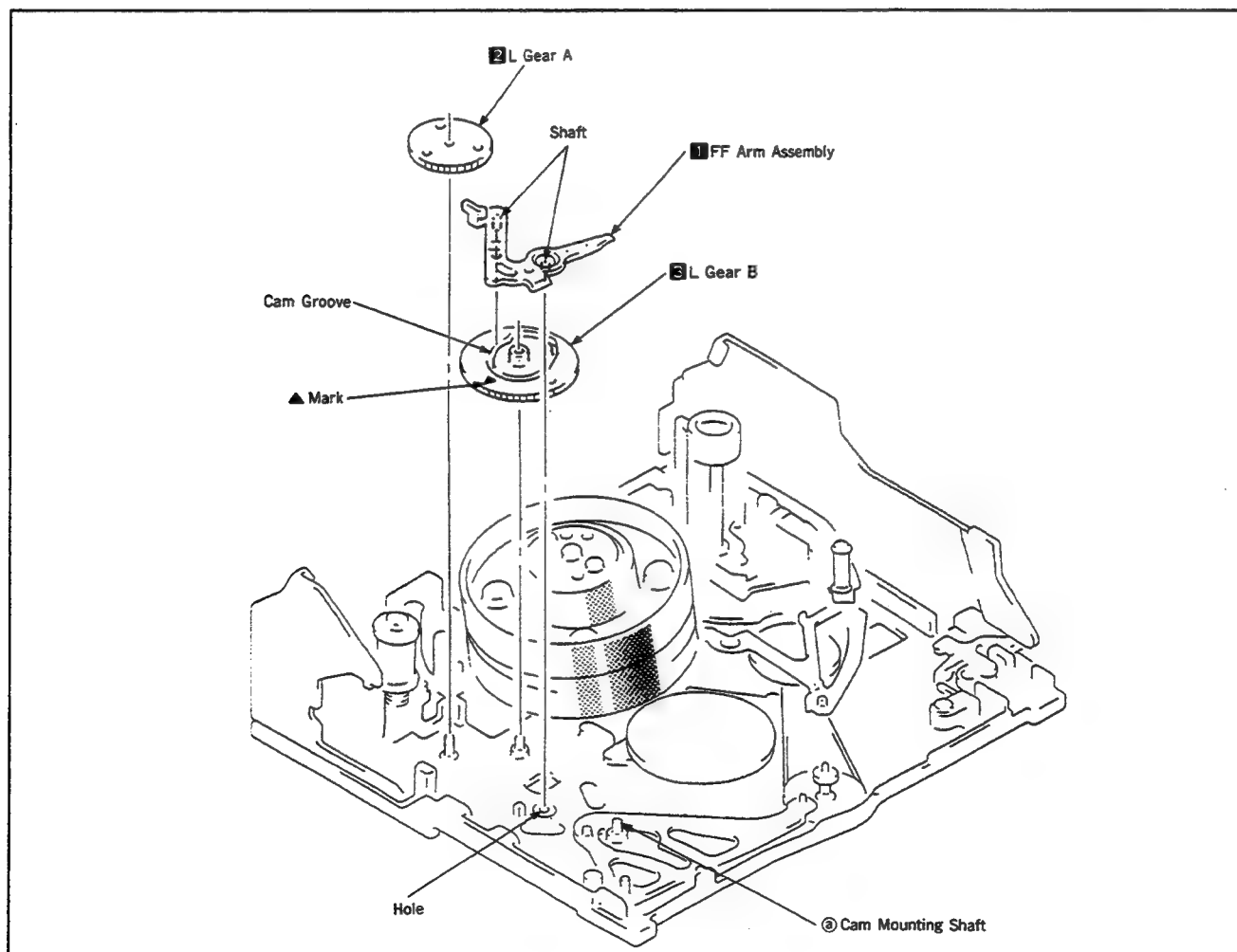


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-3, remove the drum assembly.
- 5) Referring to 3-7, remove the LS chassis assembly.
- 6) Referring to 3-14, remove the LS arm assembly.
- 7) Referring to 3-15, remove the M slider assembly.
- 8) Referring to 3-17, remove the cam.
- 9) Referring to 3-18, remove the GL arm assembly.
- 10) Referring to 3-16, remove the pinch press arm assembly.
- 11) Remove a lock washer **1**, then remove together the Change gear assembly **2**, relay belt **3** and relay pulley **4**.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

- 1) Hooking the relay belt **3** to the relay pulley **4** and Change gear assembly **2**, mount respective parts.

*At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

- 2) Mount a lock washer **1**.
- 3) Referring to 3-16, mount the pinch press arm assembly.
- 4) Referring to 3-18, mount the GL arm assembly.
- 5) Referring to 3-17, mount the cam.
- 6) Referring to 3-15, mount the M slider assembly.
- 7) Referring to 3-14, mount the LS arm assembly.
- 8) Referring to 3-7, mount the LS chassis assembly.
- 9) Referring to 3-3, mount the drum assembly.
- 10) Referring to 3-2, mount the protector base assembly.
- 11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 12) Referring to 1-1, mount the cassette compartment assembly.

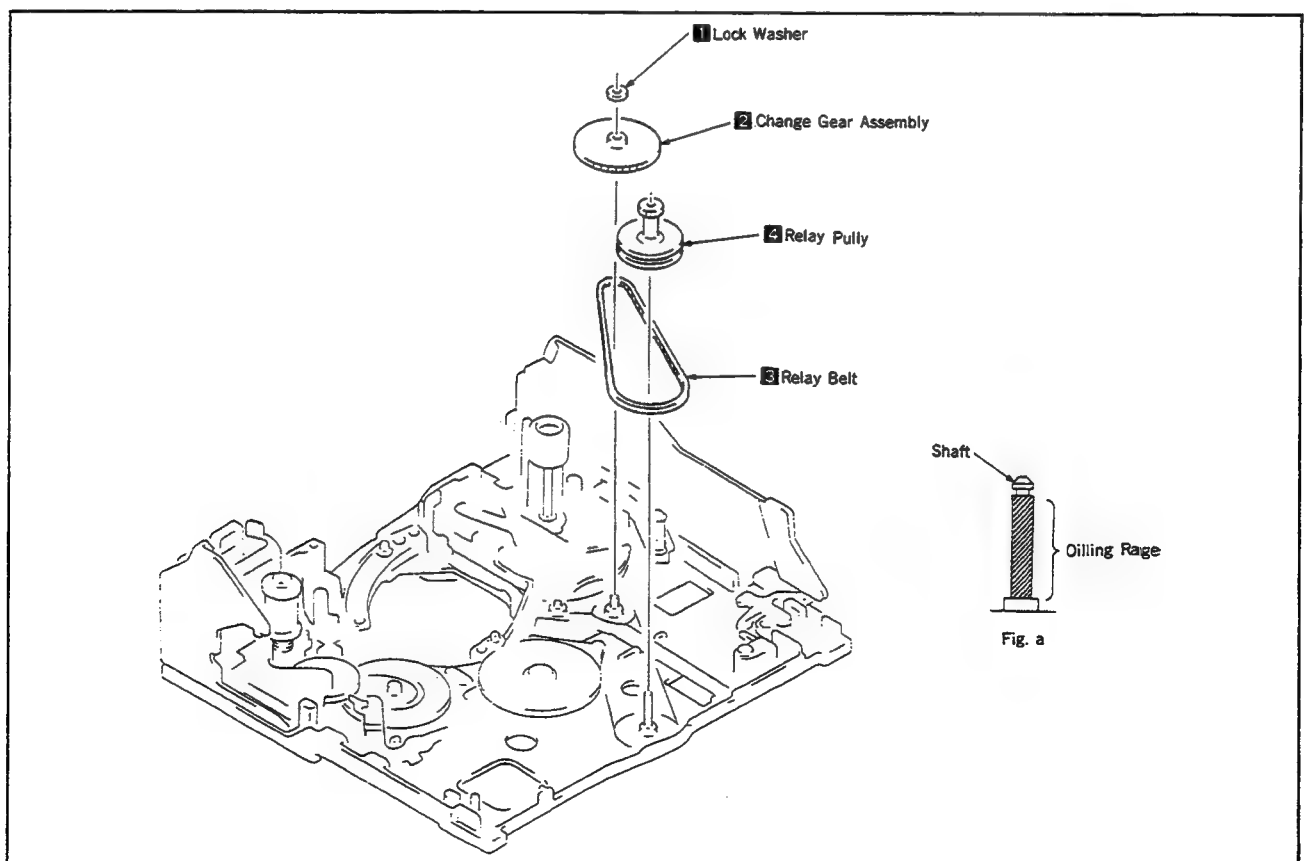


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

· If possible, make a recording before removal.

- 1) Remove the two screws **1** (Fig. 29).
- 2) Mount the jig **2** (Ref. No. J-10) with the two supplied screws **3**, then screw the attached hexagon socket screws **4** to the jig **2**. The rotary upper drum **5** will move upward and come off (Fig. 30).

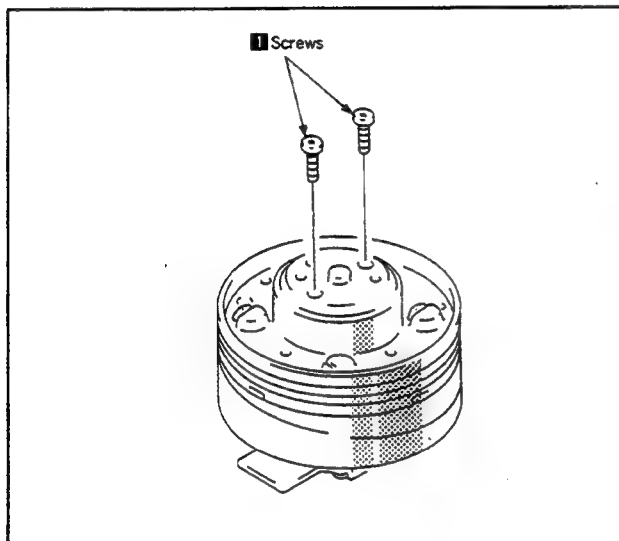


Fig. 29

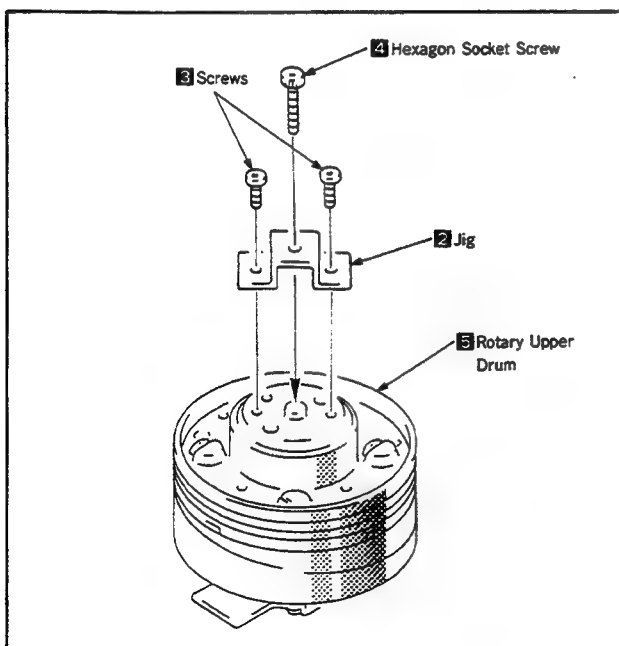


Fig. 30

2. Installation

- 1) Wipe clean the flange surface and the rotary upper drum **5** surface that makes contact with it, and confirm that they are free from dirt and scratches.
- 2) Insert the jig **6** (Ref. No. J-10) into the drum positioning hole, then set the rotary upper drum **5** by passing the jig through its positioning hole **7**. (Fig.31)
- 3) Remove the jig **6** and push down the rotary upper drum **5** gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws **1** alternately (Fig.29).
- 4) Insert the jig **6** into the positioning hole **7** again and confirm that it goes in smoothly. If it does not, loosen the two screws **1**, repeat step 2) of the Removal paragraph and restart the setting procedure.
- 5) Tighten the screws **1**.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

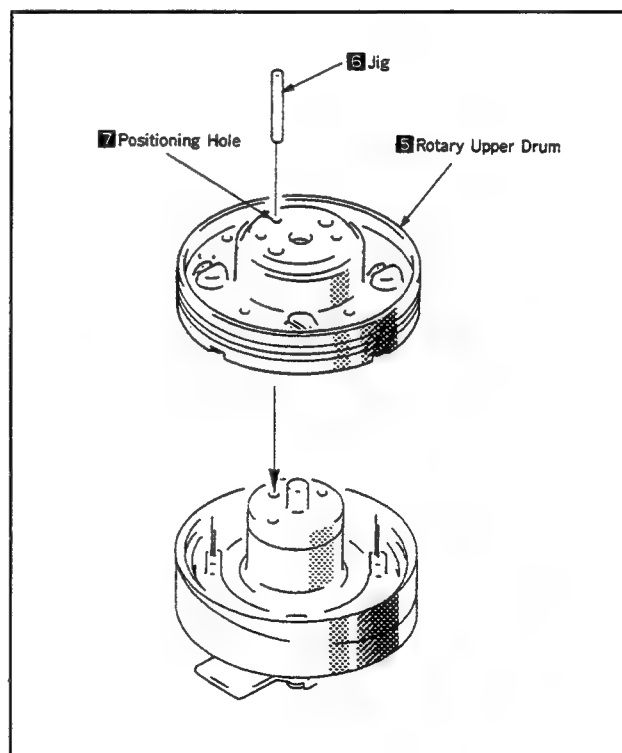


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

- 1) Set a cassette tape and run the tape in the PB mode.
- 2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
- 3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
- 4) Loosen the screw **I**.
- 5) If No.1 guide is located inside the specified position, shift the string block toward the arrow **A** using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow **B**.
- 6) Tighten the screw **I**.

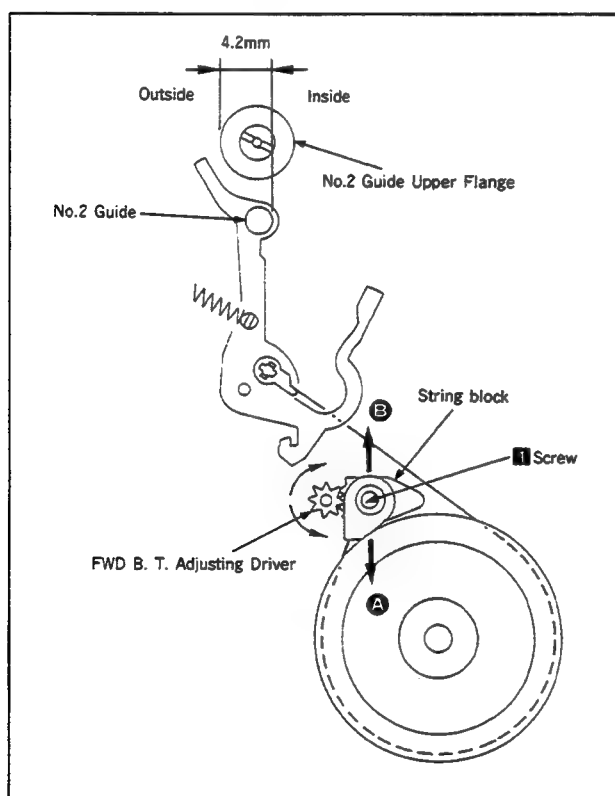


Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

- 1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
- 2) Set the torque cassette (Ref No.J-10).
- 3) Select the FWD mode, and check that the torque of S reel table is $8.5 \sim 11.5 \text{ g} \cdot \text{cm}$.
If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

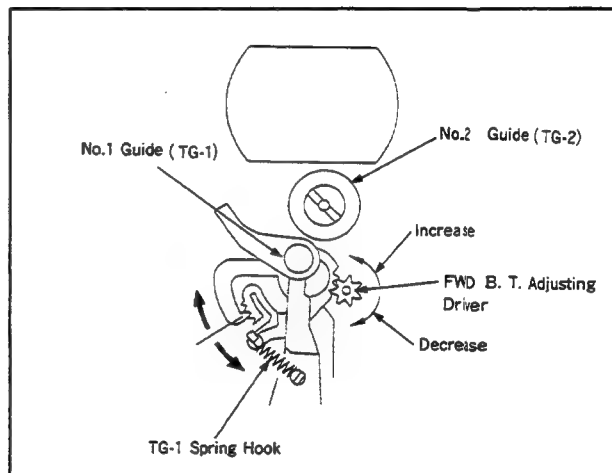


Fig. 33

3-24. REEL TORQUE CHECK

- 1) Set the torque cassette.
- 2) Select the FWD mode, and check that the torque fluctuation center of T reel table is $7 \sim 17 \text{ g} \cdot \text{cm}$
- 3) Select the REV mode, and check that the torque fluctuation center of S reel table is $25 \sim 39 \text{ g} \cdot \text{cm}$.
- 4) Select the REV mode, and check that the torque of T reel table is $7 \sim 17 \text{ g} \cdot \text{cm}$.
- 5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.

Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series

Set the adjusting remote controller to the HOLD ON side.

- 1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
- 2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode

If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

- 3) After adjustment is over, set DATA : 00, and press the PAUSE button on the adjusting remote controller (Ref No. J-16).

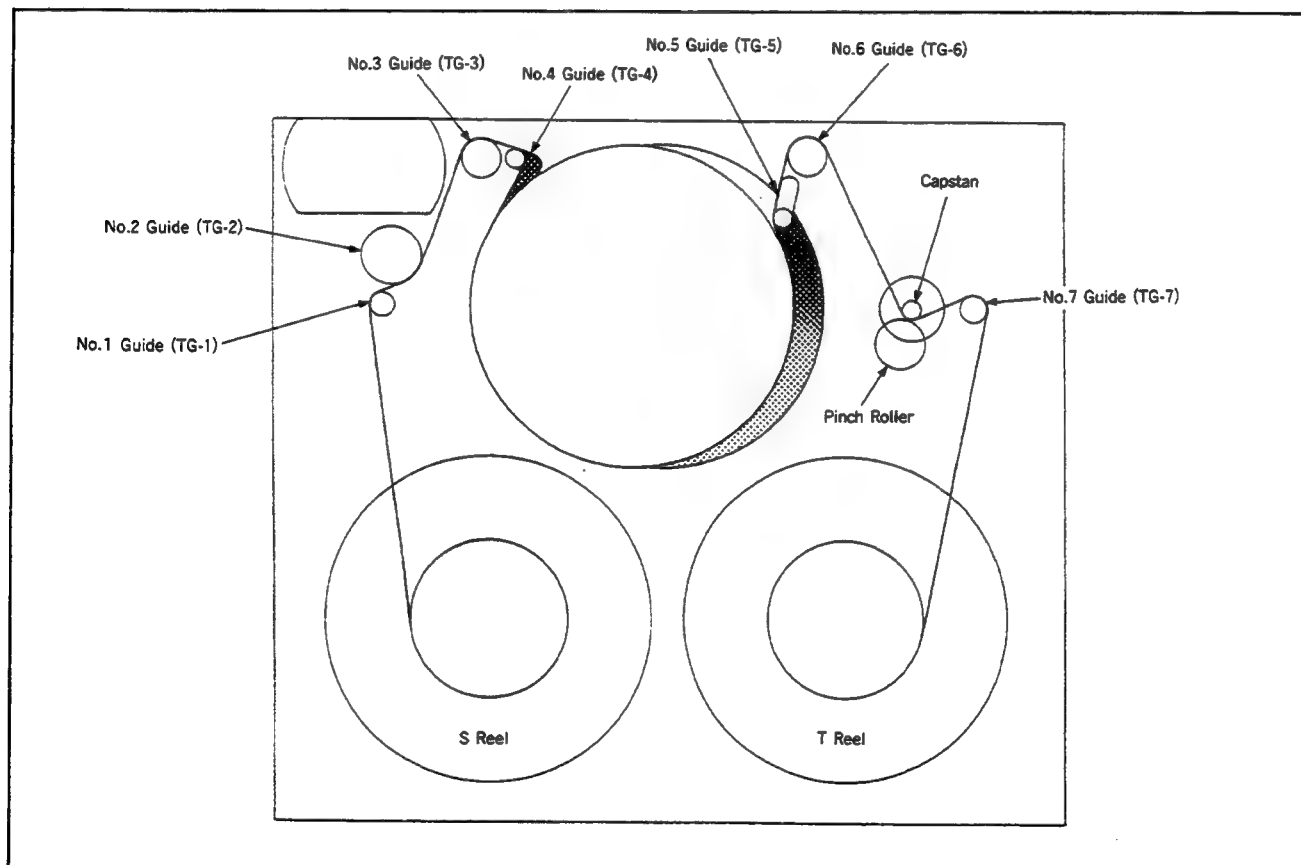


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

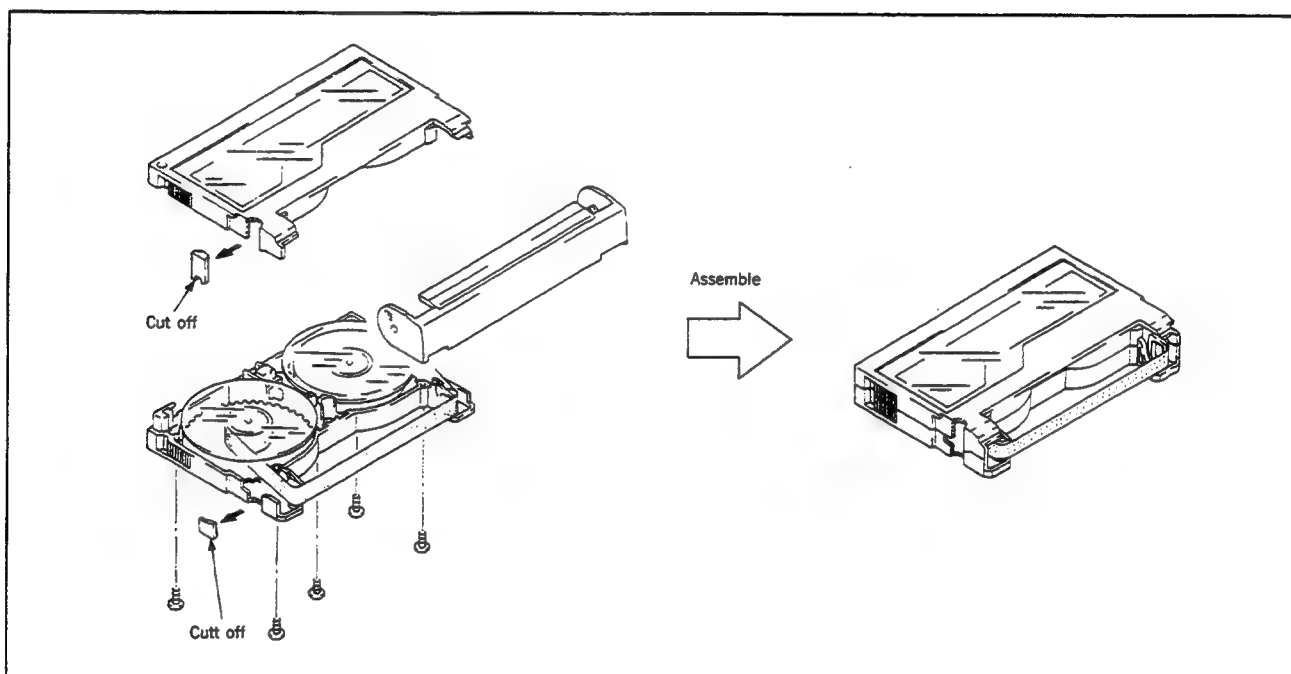


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

- 1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
- 2) Set the PATH mode using the adjusting remote controller.
- 3) connect an oscilloscope to the check pin connector of the set.

Example) For CCD-FX410 series

CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board

CH2 : CN001 pin ④ (RF SWP) on CS-31 board

- 4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).

- 5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ㉔).

If not flat, make adjustment with the procedures below.

When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ㉕ and ㉖.

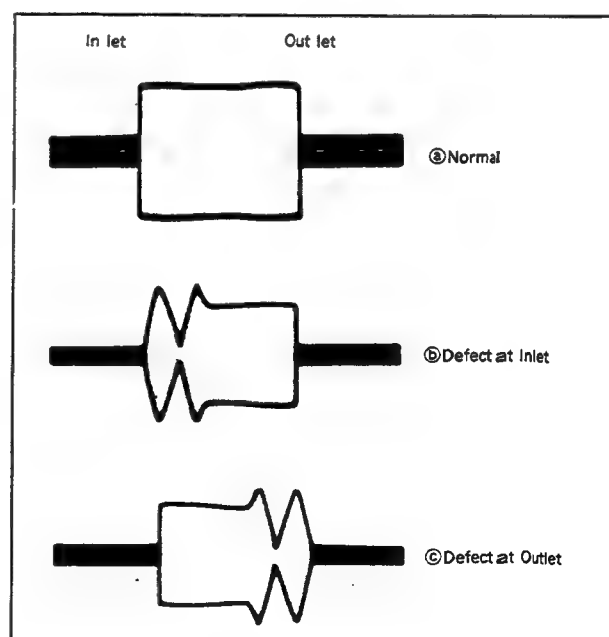


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

- 1) Play back the tracking alignment tape.
- 2) Loosen the No.3 guide (TG-3) lock screw **1** and turn the No.3 guide to flatten the waveform at the inlet.
- 3) Tighten the No.3 guide (TG-3) lock screw **1** to lock the No.3 guide.
- 4) Loosen the No.6 guide (TG-6) lock screw **2** and turn the No.6 guide to flatten the waveform at the outlet.
- 5) Tighten the No.6 guide (TG-6) lock screw **2** to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

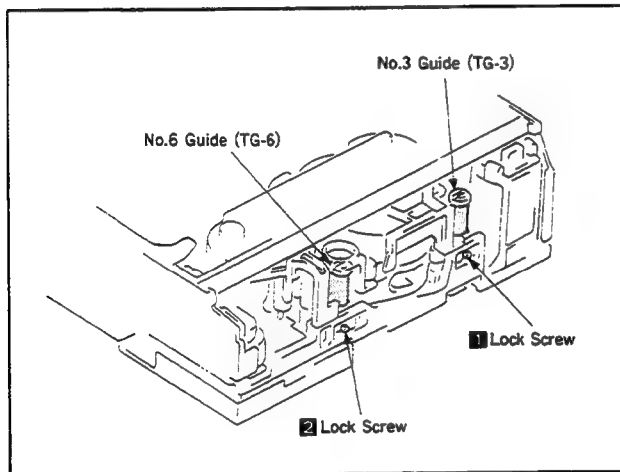


Fig. 36

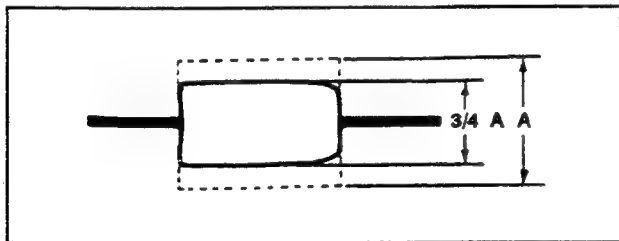


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

- 1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

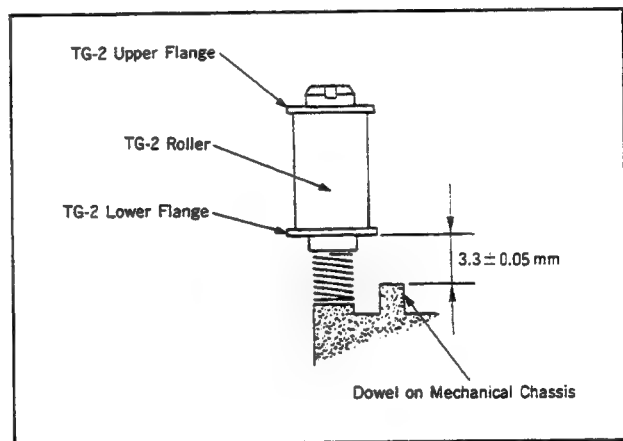


Fig. 38

[Reference]

This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

- 1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
 - 2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
 - 3) Play back the alignment tape for tracking adjustment.
 - 4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-2.
 - 5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
 - 6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
- Repeat steps 5) and 6) until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5).

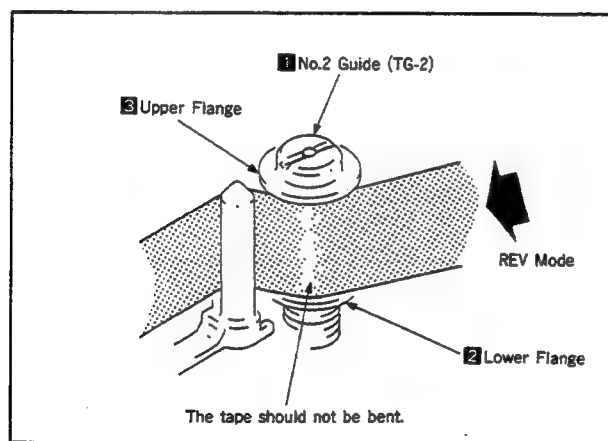


Fig. 39

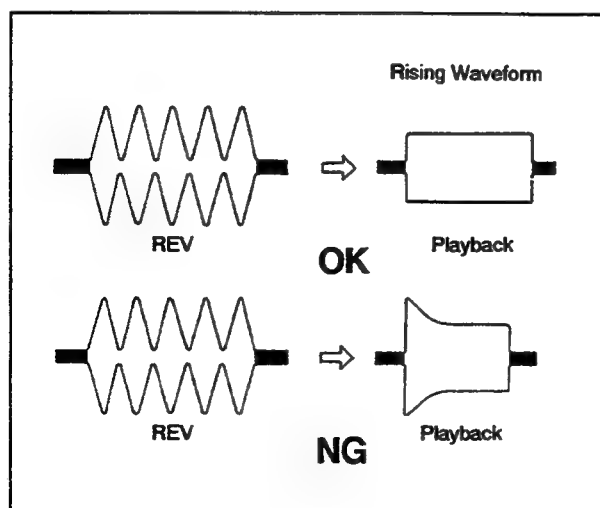


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassette (Fig. 34-B).

- 1) Play back the No.7 guide adjusting cassette and set the REV mode.
 - 2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the height adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
 - 3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the height adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
- If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

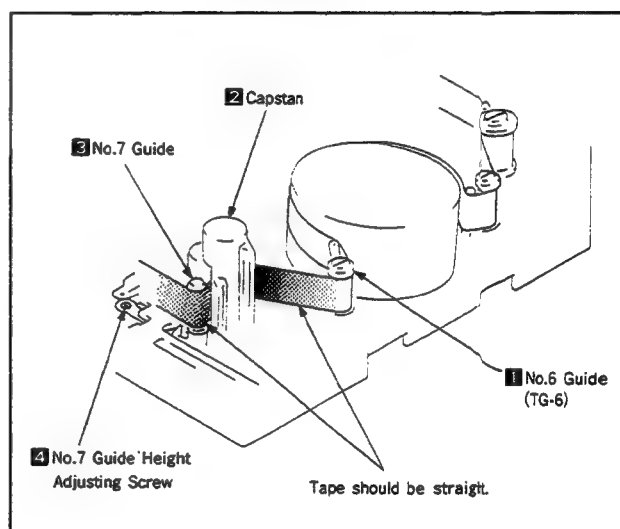


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

- 1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2. Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
- 2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig. 42). Otherwise, perform section 4-2 Tracking Fine Adjustment.

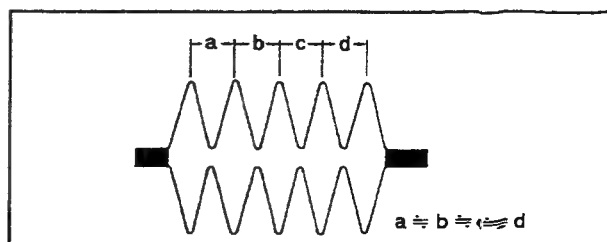


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

- 1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
- 2) Then, confirm that the minimum amplitude value (E_{MIN}) is 65 % of the maximum value (E_{MAX}) or larger (Fig. 44).
- 3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

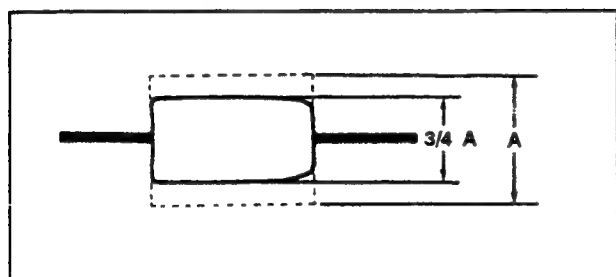


Fig. 43

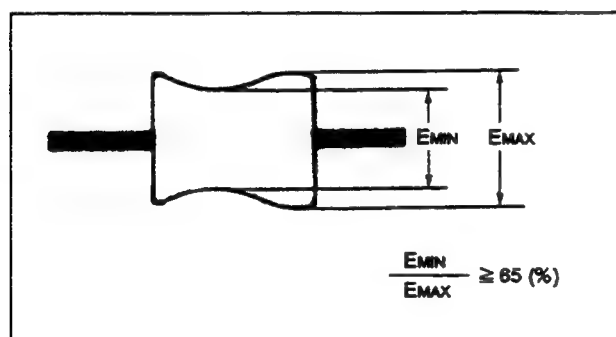


Fig. 44

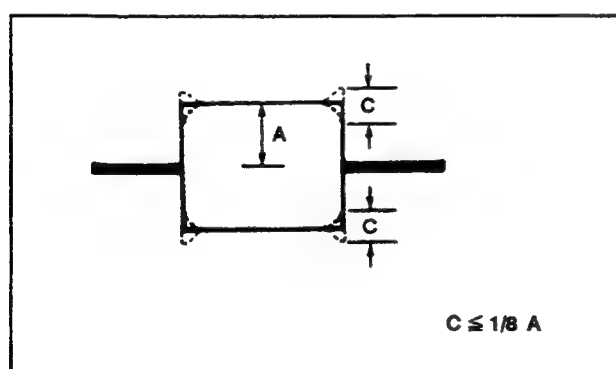


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

- 1) Play back the alignment tape for tracking adjustment.
- 2) Cancel the track shift mode.
- 3) Eject the tape, then load it again.
- 4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
- 5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
- 6) Repeat steps 3) to 5) once more.

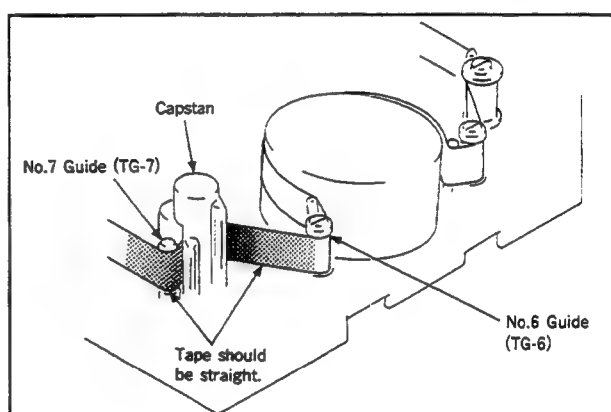


Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

- 1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
- 2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REV button to set the REV mode.

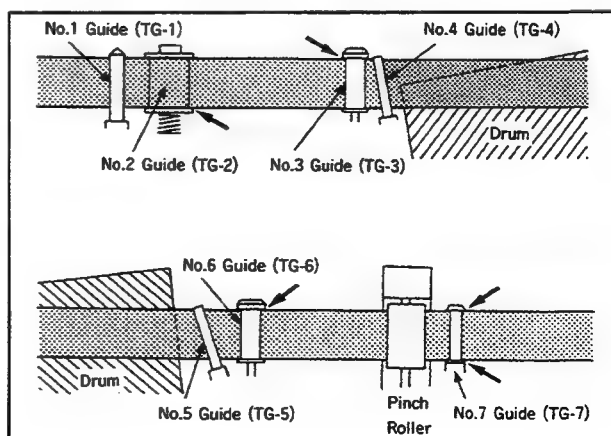


Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM SUPPLIMENT-2

Video 8

<Connection of Mode Selector IV Conversion Connector>

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

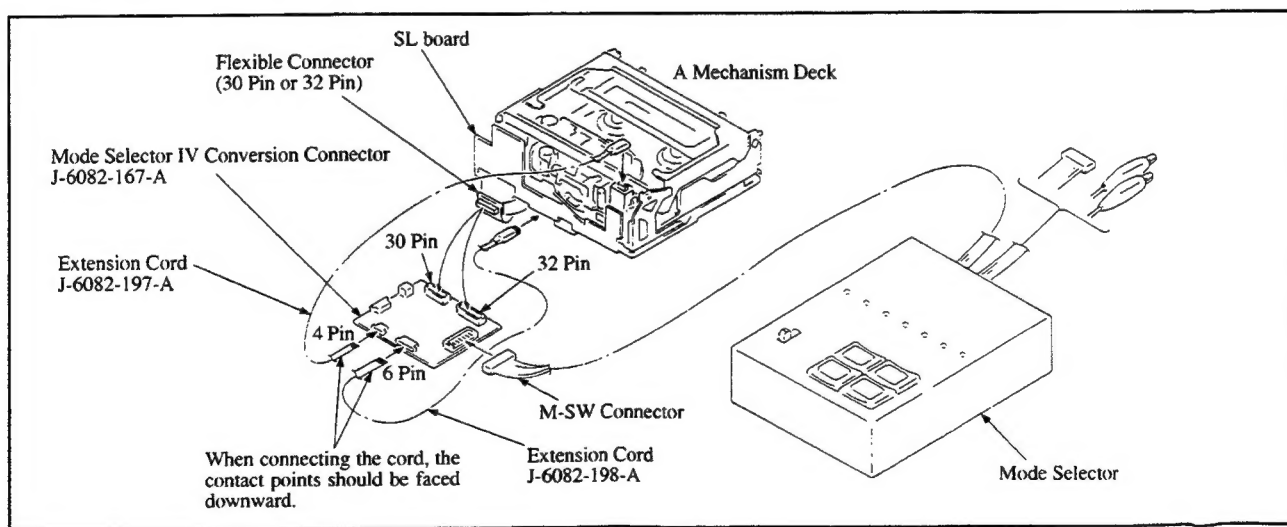
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

CCD-FX300 series, FX400 series, FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477)

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord(J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.



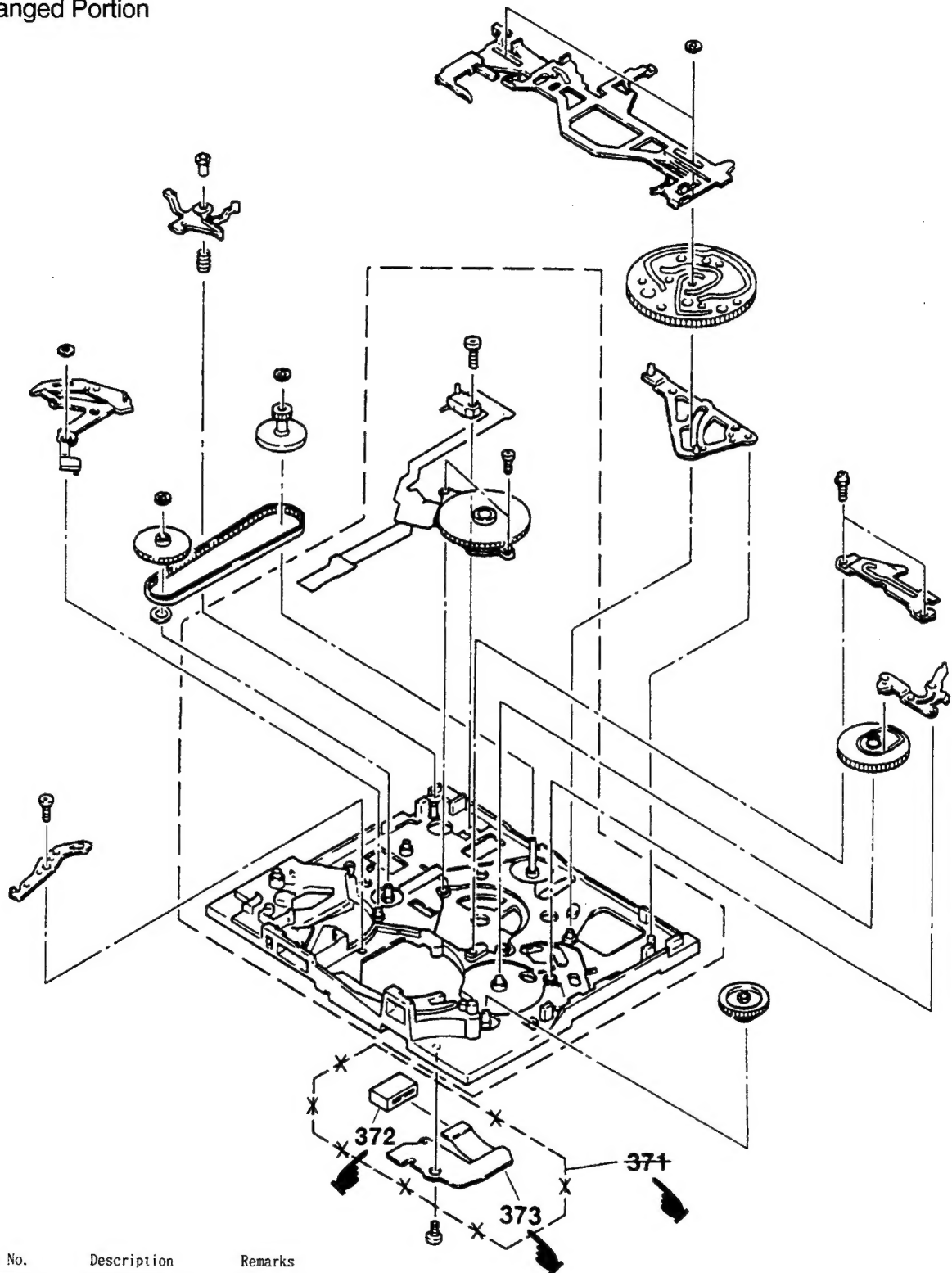
<CORRECTION>




P10. 2-4 Service jigs list

		Incorrect	Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	→ J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

 : Changed Portion



Ref.No.	Part No.	Description	Remarks
371	A 7040 311 A	FP-444 ASSY	
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	
373	1-641-639-13	FP-442 FLEXIBLE BOARD	

8mm Video MECHANICAL ADJUSTMENT MANUAL IV
